



This work is protected by copyright and other intellectual property rights and duplication or sale of all or part is not permitted, except that material may be duplicated by you for research, private study, criticism/review or educational purposes. Electronic or print copies are for your own personal, non-commercial use and shall not be passed to any other individual. No quotation may be published without proper acknowledgement. For any other use, or to quote extensively from the work, permission must be obtained from the copyright holder/s.

**From research to primary care: a knowledge
mobilisation study in osteoarthritis**

Laura Rachel Swaites

PhD

March 2020

Keele University

Abstract

Background

Osteoarthritis (OA) is the most common long-term condition in primary care and is one of the most frequent causes of pain, loss of function and disability. Research evidence alone does not always lead to changes in practice that benefit patients, and OA is often not treated as per evidenced-based guidelines. The aims of this thesis were: (i) to identify lessons learnt from a research study and implementation project regarding OA best care, in order to provide insight into the knowledge mobilisation (KM) process in primary care (ii) to develop a toolkit to optimise KM for OA in primary care.

Methods

A systematic review and thematic synthesis were conducted to explore the factors affecting the implementation of evidence-based guidelines for OA in primary care. Analysis of data from three focus groups (n=21), and qualitative interviews (n=13), were conducted with key stakeholders to understand KM in primary care. A triangulation protocol of the empirical findings was used to generate draft recommendation statements which were subsequently refined in a consensus exercise with stakeholders (n=27), at a national knowledge mobilisation event. This informed the development of a toolkit to optimise KM for OA in primary care.

Results

KM of research evidence for OA in primary care is complex and multifaceted and influenced by a range of patient and clinician motivators. KM is optimised with consideration of specific primary care contextual factors. Adopting a whole

practice approach was beneficial in circumnavigating potential implementation challenges and co-producing implementation plans relevant to the local context. The nature and impact of facilitation in optimising KM by mediating both internal and external contextual factors was shown. Clinical-academic collaboration and engaging in 'knowledge networks' optimised the uptake of evidence for OA. The knowledge mobiliser role was central to driving knowledge into practice in a contextualised way and was adopted by people with different characteristics (in terms of status, power and role). The perceived importance of patient and public involvement and engagement (PPIE) in KM was highlighted, yet uncertainty exists regarding the impact and role of PPIE in KM.

Triangulation of the three data sets produced a typology of six key empirical domains and a draft set of recommendation statements. The statements were refined following a consensus exercise with stakeholders (n=27) and the final toolkit developed.

Conclusions

This empirical study of KM demonstrated the importance of the knowledge mobiliser, underpinned by a strong academic collaboration (and infrastructure for KM) to overcome contextual barriers to KM in primary care. Further work is needed to better understand the role of PPIE in KM and evaluate the utility and transferability of the implementation toolkit.

Contents

Abstract	ii
List of Boxes	xiii
List of Figures	xiv
List of Tables	xvi
Glossary of terms, concepts and definitions	xviii
Abbreviations.....	xxii
Research outputs relating to this thesis	xxv
Funding acknowledgements.....	xxviii
Acknowledgements	xxix
Chapter 1: Introduction	1
1.1 Thesis introduction	2
1.2 Introduction to osteoarthritis.....	4
1.3 Introduction to primary care	5
1.4 The evidence to practice gap and knowledge mobilisation	7
1.5 Models of care for the management of osteoarthritis	9
1.6 Context to thesis development	12
1.7 Research question, aims and objectives	15
1.8 Philosophical assumptions underpinning this study	17
1.9 Overview of thesis structure.....	19
1.10 Chapter summary.....	21

Chapter 2: Knowledge, knowledge mobilisation and theoretical approaches to the study of knowledge mobilisation	22
2.1 Introduction.....	23
2.2 Overview of knowledge and basic concepts	24
2.3 How knowledge is used and shared.....	30
2.3.1 The historical context of knowledge mobilisation.....	30
2.3.2 Definitions for thesis	37
2.3.3 Approaches to knowledge mobilisation	38
2.4 Summary of knowledge and knowledge mobilisation.....	41
2.5 Theoretical approaches to knowledge mobilisation.....	42
2.6 Theoretical approaches relevant to this thesis.....	44
2.6.1 Normalisation Process Theory	46
2.6.2 Community of Practice	53
2.6.3 Absorptive Capacity	58
2.6.4 The Integrated Promoting Action on Research Implementation in Health Services Framework	63
2.7 Discussion	70
2.8 Conclusion	74
Chapter 3: What works in getting evidence into practice in primary care: a review of current evidence and stakeholder views	75
3.1 Introduction.....	76
3.2 Overview of Lau systematic reviews of reviews	79

3.3 Effective strategies for facilitating the implementation of complex interventions in primary care.....	83
3.3.1 Overview.....	83
3.3.2 Findings specific to OA.....	84
3.3.3 Summary	84
3.4 Barriers and facilitators to the implementation of research evidence or complex interventions in primary care.....	85
3.4.1 Overview.....	85
3.4.2 Findings specific to OA.....	86
3.4.3 Summary	87
3.5 Recommendations and limitations of both systematic reviews of reviews and relevance to the thesis	87
3.6 Multi-stakeholder opinions of evidence-based recommendations for implementation in primary care	91
3.6.1 Stakeholder involvement in healthcare research	91
3.6.2 The rationale for the choice of approach	92
3.7 Stakeholder advisory group conduct.....	94
3.8 Key discussion points to inform the thesis	98
3.9 Discussion.....	107
3.9.1 Summary of main findings.....	107
3.9.2 Reflections and comparison with existing literature.....	108
3.9.3 Implications for this thesis.....	111
3.9.4 Strengths and limitations	113

3.10 Conclusion	115
Chapter 4: Factors influencing the implementation of evidence-based guidelines for osteoarthritis in primary care: a systematic review and thematic synthesis	117
4.1 Introduction	118
4.2 Methodological considerations for the systematic review	120
4.3 Methods for synthesising qualitative research	121
4.4 Systematic review methods	124
4.4.1 Search strategy.....	124
4.4.2 Study selection	125
4.4.3 Quality assessment.....	128
4.4.4 Data analysis and synthesis	131
4.5 Results.....	135
4.5.1 Included studies	135
4.5.2 Study characteristics.....	136
4.5.3 General methodological considerations.....	139
4.5.4 Thematic synthesis	141
4.5.4.1 Alignment between best practice, healthcare professional views, and patient views	143
4.5.4.2 The importance of implementation researchers engaging with the organisation	149
4.5.4.3 A disconnect between research and the 'real-world'.....	150
4.6 Discussion	153

4.6.1 Summary of results.....	153
4.6.2 Comparison with existing literature.....	153
4.6.3 Strengths and limitations	159
4.6.4 Implications for implementers.....	163
4.6.5 Implications for research.....	164
4.7 Conclusion	166
Chapter 5: Research methods	168
5.1 Introduction	169
5.2 Overview	170
5.3 Methodological considerations for the thesis	174
5.4 Theoretical considerations	177
5.5 Overview of methods	178
5.6 Qualitative methods.....	179
5.6.1 Overview.....	179
5.6.2 Study setting	179
5.6.3 Sample and recruitment.....	185
5.6.4 Data collection	187
5.6.5 Data analysis	188
5.7 Deriving and refining recommendations and developing a toolkit.....	193
5.7.1 Triangulation protocol.....	193
5.7.2 Stakeholder engagement consensus exercise	200
5.8 Patient and Public Involvement and Engagement.....	209

5.9 Ethical considerations	212
5.9.1 Approvals.....	212
5.9.2 Recruitment	212
5.9.3 Sampling	213
5.9.4 Consent and withdrawal	214
5.9.5 Change to method during data collection.....	214
5.10 Reflexivity.....	216
5.11 Chapter summary	218
Chapter 6: Investigating the transition from a research trial into the real world: analysis of focus group data	219
6.1 Introduction.....	220
6.2 Overview of methods and context.....	221
6.3 Results.....	221
6.3.1 Key determinants of implementation	223
6.3.2 From knowing to doing.....	230
6.4 Discussion	237
6.4.1 Summary of results	237
6.4.2 Comparison with existing literature	239
6.4.3 Strengths and limitations.....	247
6.5 Conclusion.....	249
Chapter 7: Understanding uptake in the real world: an interview study	250
7.1 Introduction.....	251

7.2 Overview of method	252
7.3 Results	254
7.3.1 Participants.....	254
7.3.2 Thematic findings	255
7.4 Discussion.....	289
7.4.1 Summary of main findings.....	289
7.4.2 Comparison with existing literature.....	291
7.4.3 Strengths and limitations	307
7.4.4 Development of a conceptual model.....	311
7.5 Conclusion	313
Chapter 8: Development of a toolkit for KM in primary care: qualitative data triangulation	314
8.1 Introduction	315
8.2 Background and rationale	316
8.3 Overview of methods	317
8.4 Results	319
8.4.1 Convergence coding (step 2)	321
8.4.2 Iterative checking and interpretative analysis (step 3)	333
8.4.3 Development of a typology and draft recommendation statements (step 4).....	344
8.5 Discussion.....	358
8.5.1 Main findings.....	358
8.5.2 Methodological implications, strengths and limitations.....	362

8.6 Conclusion	370
Chapter 9: Development of a toolkit for KM in primary care: a stakeholder engagement consensus exercise.....	371
9.1 Introduction.....	372
9.2 Overview of methods.....	372
9.3 Results.....	373
9.3.1 Participants	373
9.3.2 Consensus conference digital voting	373
9.3.3 Refinement of recommendations and final toolkit development ..	389
9.4 Discussion	402
9.4.1 Summary of main findings	402
9.4.2 Comparison with existing literature	403
9.4.3 Strengths and limitations.....	409
9.4.4 Implications for research and practice.....	414
9.5 Conclusion	415
Chapter 10: Discussion and Conclusion	417
10.1 Introduction	418
10.2 Summary of thesis objectives, methods used, and key findings	419
10.2.1 Exploring the process of KM and identifying lessons learnt from a research study (MOSAICS) and implementation project (JIGSAW)	419
10.2.2 Developing a toolkit to optimise KM of innovations for OA in primary care	422
10.3 Overarching themes	425

10.3.1 What is knowledge mobilisation in primary care?	425
10.3.2 The role of the knowledge mobilisers in facilitating KM	429
10.3.3 Patient and Public Involvement and Engagement and its role in KM	433
10.4 Strengths and limitations	437
10.4.1 Strengths of the thesis	437
10.4.2 Limitations of the thesis	442
10.5 Implications for KM practice, policy and research	445
10.5.1 Implications for KM practice and policy	445
10.5.2 Implications for research	451
10.6 Conclusion.....	455
References	456
Appendix.....	488

List of Boxes

Box 1 Thesis objectives.....	16
Box 2 The three propositions of Normalisation Process Theory (May et al., 2009)	47
Box 3 Characteristics/three fundamental elements of a Community of Practice (Wenger et al., 2002, Wenger, 1998).....	54
Box 4 Organisational capabilities (Van Den Bosch and Volberda 1999).....	60
Box 5 Components of the PARIHS Framework (Kitson et al., 1998)	63
Box 6 Components of i-PARIHS (Harvey and Kitson 2016).....	64
Box 7 Verbal and written comments from the stakeholder engagement exercise	374

List of Figures

Figure 1 Thesis structure	20
Figure 2 Schematic representation of some of the key concepts that have come together in the evolution of knowledge mobilisation	31
Figure 3 Theoretical approaches used in implementation (adapted from Nilsen 2015)	44
Figure 4 The constructs of Normalisation Process Theory (May et al., 2015)	48
Figure 5 The four domains of Absorptive Capacity (adapted from Zahra and George, 2002)	59
Figure 6 The constructs of the Integrated Promoting Action in Research Implementation in Health Services framework	65
Figure 7 The key elements of the conceptual framework developed by Lau et al (2016) describing factors that enable or impede implementation of complex interventions in primary care.....	86
Figure 8 Flowchart documenting the study selection process for the review	136
Figure 9 Thematic synthesis process flowchart	143
Figure 10 Overview of empirical research conducted in this thesis	172
Figure 11 Study design	173
Figure 12 Context to the focus group study	180
Figure 13 Recruitment process for interview study	186
Figure 14 Patient and Public Involvement and Engagement in this thesis ..	210
Figure 15 Schematic representation of findings from the analysis of focus group data mapped to the i-PARIHS framework	240

Figure 16 Multidisciplinary nature of participants interviewed and connections to the Keele Impact Accelerator Unit	296
Figure 17 Conceptual model of the role of facilitation in knowledge mobilisation in general practice	312
Figure 18 Flowchart of the triangulation process	320
Figure 19 Key findings typology.....	344
Figure 20 Mapping the triangulation typology to the i-PARIHS framework..	361
Figure 21 The Knowledge Mobilisation Toolkit	396
Figure 22 The role of facilitation mediating across boundaries for optimal knowledge mobilisation.....	432

List of Tables

Table 1 Overview of work by Lau et al examining the evidence to practice gap in primary care	80
Table 2 Criteria for including studies in the systematic review.....	127
Table 3 Quality assessment criteria (adapted from Harden et al 2009 and CASP 2006)	131
Table 4 Quality appraisal of the four included studies	140
Table 5 Components of the training package delivered to the intervention group and the control group in the MOSAICS trial.....	183
Table 6 Overview of thematic analysis stages informed by Braun and Clarke (2006).....	192
Table 7 Types of triangulation (Denzin, 2017)	193
Table 8 Triangulation protocol (adapted from Farmer et al, 2006)	196
Table 9 Characteristics of the focus group practices and participants	222
Table 10 Convergence coding results.....	322
Table 11 Development of draft recommendations	346
Table 12 Number of draft recommendation statements per typology category	357
Table 13 Approaches to knowledge mobilisation results	376
Table 14 The knowledge mobiliser role results	378
Table 15 Understanding context results	381
Table 16 Implementation planning results	383
Table 17 Nature of the intervention results.....	385
Table 18 Appealing to a range of priorities results.....	387

Table 19 Overall priority areas results	388
Table 20 The 21 recommendation statements that obtained 75% (or above) agreement.....	390
Table 21 The 10 recommendation statements that obtained less than 75% agreement and decisions regarding refinement.....	392
Table 22 Search terms used for the systematic review (appendix 5).....	512

Glossary of terms, concepts and definitions

Academic Health Science Network (AHSN) - Academic Health Science Networks work in partnership to identify, develop, adopt and spread new products and services by focussing on the needs of patients and local populations. There are 15 AHSNs across England, established by NHS England in 2013 to spread innovation at pace and scale – improving health and generating economic growth. Each AHSN works across a distinct geography serving a different population in each region. As the only bodies that connect NHS and academic organisations, local authorities, the third sector and industry, AHSNs are catalysts that create the right conditions to facilitate change across whole health and social care economies, with a clear focus on improving outcomes for patients.

Boundary Spanners – Individuals that sit across one or more organisations. These can be incidental, or, non-professional boundary spanners who do not have a specific boundary spanning job but do cross boundaries. Benefits of boundary spanning roles include: the sharing of knowledge, skills, and ideas; a greater understanding of different contexts; and more joined up networks.

Collaborations for Leadership in Applied Health Research and Care (CLAHRCs) - Collaborations between local providers of NHS services and NHS commissioners, universities, other relevant local organisations and the relevant Academic Health Science Network. There are 13 NIHR CLAHRCs and their primary focus is on research targeted at chronic disease and public health interventions.

Clinical Commissioning Groups (CCGs) - The clinically led statutory bodies who commission mental health services, urgent and emergency care, elective hospital services, and community health care. There are 209 CCGs in England and together they are responsible for 2/3 of the total NHS England budget.

Complex intervention – An intervention with multiple interacting components.

Context - The social, cultural, economic, political, legal, and physical environment, as well as the institutional setting.

Department of Health - A department of the United Kingdom government with responsibility for government policy for English health and social care matters and for the English National Health Service.

Evidence-based medicine (EBM) – The conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients.

Evidence based practice (EBP) – The notion that decisions about health care are based on the best available, current, valid and relevant evidence. These decisions should be made by those receiving care, informed by the tacit and explicit knowledge of those providing care, within the context of available resources.

Evidence to Practice Gap - The gap between current best evidence and evidence-based practice.

Implementation – The process of putting knowledge into practice.

Implementation strategies - Techniques or methods aimed at improving or optimising the uptake and implementation of complex interventions in routine care.

Innovation - The action or process of innovating.

Intervention- The action or process of intervening or taking action to improve a situation.

Interprofessional working - To know about the roles of other professional groups and to be able to work with other professions in the context of a team where each member has a clearly defined role to achieve the same goal or outcome.

Key Performance Indicator (KPI)- A measurable value that demonstrates how effectively objectives are being achieved.

Knowledge Mobilisation (KM) - A proactive process that involves efforts to transform practice through the circulation of knowledge within and across practice domains.

Knowledge mobiliser – The person(s) who moves knowledge to where it is most useful.

Lay Involvement in Knowledge Mobilisation (LINK) Group - The LINK Working Party enables and supports meaningful Patient and Public Involvement and Engagement (PPIE) in the implementation of research evidence into real life healthcare practice. The group aims to facilitate the movement, or 'mobilisation,' of knowledge and evidence-based innovations into wider use, for the benefit of the wider community, nationally and internationally. The LINK Working Party brings together members of the patient groups and organisations that it is trying to reach. It is made up of members of the Research User Group (RUG), along with patient representatives from CLAHRC West Midlands (Collaboration for Leadership in Applied Health Research and Care), members of local Patient and Public Involvement and Engagement groups (Haywood Users Group), an ethics specialist, people with links to charities and charitable organisations (e.g. Arthritis and Musculoskeletal Alliance ARMA, Versus Arthritis) healthcare staff and carers.

Q Community - A connected community working together to improve health and care quality across the UK. The initiative was developed by the Health Foundation.

Quality and Outcomes Framework (QOF) - A system for the performance management and payment of general practitioners (GPs) in the National Health Service (NHS) in England, Wales, Scotland and Northern Ireland. It was introduced as part of the new general medical services (GMS) contract in April 2004, replacing various other fee arrangements.

Research Excellence Framework (REF) - The system for assessing the quality of research in UK higher education institutions. It is an impact evaluation which assesses the research of British higher education institutions. Its stated aims are to provide accountability for public investment in research, establish "reputational yardsticks", and thereby to achieve an efficient allocation of resources.

Sustainability and Transformation Partnership – Partnerships formed by the NHS and local councils to run services in a more coordinated way, to agree

system-wide priorities, and to plan collectively how to improve residents' day-to-day health. Partnerships published their initial proposals in 2016 which have since continued to develop to reflect local priorities, views from people who use and provide services, elected representatives and local voluntary organisations.

Systems thinking - A holistic approach to analysis that focuses on the way that a system's constituent parts interrelate and how systems work overtime and within the context of larger systems.

University of the Third Age (U3A) - A UK movement of retired and semi-retired people who come together to continue their educational, social and creative interests and continue their learning in a friendly and informal environment.

Whole system working - Services are responsive to the needs of the individual; all stakeholders accept their inter-dependency and the fact that the action of anyone of them may have an impact on the whole system. There is agreement between the stakeholders as to the vision of the service(s), the priorities, the roles and responsibilities, the resources, the risks and the review mechanisms Those using the system do not experience gaps or duplication in provision and relationships and partnerships are enhanced.

Abbreviations

ACAP - Absorptive Capacity

AHP - Allied Health Professional

ARUK - Arthritis Research UK

CAHPR - Council for Allied Health Professional Research

CAQDAS - Computer-Assisted Qualitative Data Analysis

CASP - Critical Appraisal Skills Programme

CCG - Clinical Commissioning Group

CIHR - Canadian Institute of Health Research

CINAHL - Cumulative Index to Nursing and Allied Health Literature

CoP - Community of Practice

CQC - Care and Quality Commission

CSP - Chartered Society of Physiotherapy

DH - Department of Health

EBM - Evidence-Based Medicine

EBP - Evidence-Based Practice

EPOC - the Cochrane Effective Practice and Organisation of Care

ESRC - Economic and Social Research Council

EULAR - European League Against Rheumatism

FCP - First Contact Physiotherapy

GP - General Practitioner

GRIPP - Guidance for Reporting of the Involvement of Patients and the Public in research

HCP - Healthcare Professional

HSRUK - Health Services Research UK

IAU - Impact Accelerator Unit

i-PARIHS – Integrated Promoting Action on Research Implementation in Health Services

JIGSAW - Joint Implementation of Guidelines for Osteoarthritis in the West Midlands

KM - Knowledge Mobilisation

KMRF - Knowledge Mobilisation Research Fellow

LTC - Long-term Condition

MOAC - Model OA Consultation

MOSAICS - Managing Osteoarthritis in Consultations

NHS - National Health Service

NICE - National Institute for Health and Care Excellence

NGT Nominal Group Technique

NPT – Normalisation Process Theory

OA – Osteoarthritis

OARSI – Osteoarthritis Research Society International

OSOP - One sheet of paper

PARIHS - Promoting Action on Research Implementation in Health Services

PCT - Primary Care Trust

PDSA - Plan-do-study-act

PPIE - Patient and Public Involvement and Engagement

PPG - Patient Participation Group

PRISMA - Preferred Reporting Items for Systematic Reviews and Meta-Analyses

PSP - Priority Setting Partnership

QOF - Quality and Outcomes Framework

RA - Rheumatoid arthritis

RCT - Randomised Controlled Trial

REC - Research Ethics Committee

REF - Research Excellence Framework

RI - Research Institute

RUG - Research User Group

SPARC - Short Placement Award for Research Collaboration

SPCR - School for Primary Care Research

STP - Sustainability and Transformation Partnership

TDF - Theoretical Domains Framework

UK - United Kingdom

VA - Versus Arthritis

WHO - World Health Organisation

Research outputs relating to this thesis

Please note Marshall = Swaithe

Awards

NIHR Infrastructure SPARC Award - Awarded £5000 to complete a placement at UWE Bristol (with Professor Nicki Walsh) comprising training, research and mentoring to further develop knowledge, skills, and expertise in knowledge mobilisation.

Peer review publications

Swaithe, L. Cotterell, E. Dziedzic, K. Quicke, J. Response to 'Losina E. Why past research successes do not translate to clinical reality: gaps in evidence on exercise program efficiency'. *Osteoarthritis and Cartilage*. 2019; 27:1-2

Oral presentations

Swaithe, L. (2019) From research to primary care: a knowledge mobilisation study in osteoarthritis. Institute for Primary Care and Health Sciences Postgraduate Symposium. Keele University. First place prize for patient and public involvement

Swaithe, L. (2019) Optimising knowledge mobilisation for musculoskeletal innovations in primary care (Knowledge mobilisation workshop). Invited speaker. British Society of Rheumatology national conference. Birmingham

Swaithe, L. (2019) What can we learn from implementation science? (Implementation workshop). Invited speaker. British Pain Society national conference, London

Swaithe, L. (2018) Getting Evidence into Practice. Commissioning Evidence-Based Musculoskeletal Services, Knowledge mobilisation event. Birmingham

Swaithe, L. (2018) Obstacles to Implementation. Impact Accelerator Away Day. Keele University

Swaithes, L. (2018) Optimising the implementation of research findings in primary care: Preliminary Ph.D. findings. Bristol University and Bristol and North Somerset and South Gloucestershire Clinical Commissioning Group. Bristol

Swaithes, L. (2018) Optimising implementation of research findings in primary care: Results from a qualitative study. Physiotherapy UK Conference. Birmingham

Swaithes, L (2018) Knowledge mobilisation in practice. Invited speaker. Council for Allied Health Professional Research (CAHPR) West Midlands Research Symposium. Birmingham

Swaithes, L. (2018) Implementing evidence-based guidelines for osteoarthritis in primary care: a systematic review. International pre-Osteoarthritis Research Society International (OARSI) meeting with the Centre for Health Exercise and Sports Medicine University of Melbourne. Keele University

Marshall L. (2017) Knowledge mobilisation theory – play it safe or step into uncharted territory? Institute for Primary Care and Health Sciences Postgraduate Symposium. Keele University

Poster presentations

Swaithes, L. Paskins, Z. Finney, A. Dziedzic, K (2018) Optimising implementation of research findings in primary care: Results from a qualitative study. NIHR School for Primary Care Research Showcase. London. Highly commended

Swaithes, L. Paskins, Z. Finney, A. Dziedzic, K. (2018) Operationalising absorptive capacity to bridge the gap between implementation research and clinical practice: a focus group enquiry. 1st Annual Implementation Science Research Conference. London

Swaithes, L. Paskins, Z. Finney, A. Dziedzic, K. (2018) Factors affecting knowledge mobilisation in primary care: a focus group enquiry. Royal College of General Practitioners Midlands Faculty Research Symposium. Keele University

Swaithes, L. Paskins, Z. Finney, A. Dziedzic, K. (2018) *It's like trying to fit a saddle on a cow* – stakeholder perspectives on knowledge mobilisation in primary care. Institute for Primary Care and Health Sciences Postgraduate Symposium: Keele University (Awarded poster prize and selected for showcasing at ARUK celebration event)

Marshall, L. Finney, A. Paskins, Z. Dziedzic, K (2018) Exploring knowledge mobilisation at the research to practice interface: stakeholder advisory group findings. Interactive poster. UK Knowledge Mobilisation Forum. Bristol (one of only 12 selected to present)

Dziedzic, K. Marshall, L. Finney, A. Paskins, Z. Stevenson, K. Duffy, H. Evans, N. Quicke, J. Ashby, S. Cottrell, E. Edwards, J. Cooper, V. Warburton, L. Blackburn, S. Campbell, L. Mallen, C. Boaden, R. Currie, G. (2017) Knowledge mobilisation in primary care: a new role for PICO? Evidence Live Conference Oxford

Marshall, L. Finney, A. Paskins, Z. Dziedzic, K. (2017) Getting evidence into practice – knowledge mobilisation theory, what's new? Health Service Research UK Conference. Nottingham

Funding acknowledgements

This knowledge mobilisation study has been undertaken as part of Professor Krysia Dziedzics' NIHR Knowledge Mobilisation Research Fellowship (KMRF) with the support of the National Institute for Health Research (NIHR) West Midlands Collaborations for Leadership in Applied Health Research and Care (CLAHRC) and EIT Health. Funding for a post-doctoral Launching Fellowship from the School for Primary Care Research (SPCR) has also been awarded.

Acknowledgements

I would like to thank my supervisors Dr Zoe Paskins, Dr Andrew Finney and Professor Krysia Dzedzic for their invaluable support, expertise, patience and inspiration throughout the project. Thanks also to Professor Christian Mallen for advising on this work and to Graeme Currie whose advice opened my eyes to further theoretical literature, developed my understanding of this, and provided constructive suggestions for improvement along the way. A special thank you must go to Professor Margaret Cupples and Dr Tom Sanders whose attention to detail as PhD examiners helped to shape this final thesis.

In particular, I would like to acknowledge Professor Nicki Walsh for being an inspirational mentor throughout the duration of this thesis, whose knowledge, support, and encouragement has been exceptional. Thank you for agreeing to host my National Institute for Health Research Short Placement Award for Research Collaboration. This has been instrumental in my personal and professional development and contributed significantly to my understanding and critical reflection of broader thesis issues.

My peers, colleagues and friends Lorraine Watson, Anne O'Brien, Dr Jonathan Quicke, Dr Sarah Harrison, and everyone in the Impact Accelerator Unit have provided me with much needed expertise, guidance and support throughout the duration of my journey. I am grateful for the opportunity to work within such a wonderful team. Thanks to external colleagues, in particular, Professor Fiona Cowdell, who provided peer review feedback to help shape and strengthen several components of this thesis.

This work would not have been possible without the time and honesty of those who contributed and participated in my research. These include professionals, patients and other stakeholders, such as the Research User Group and Lay Involvement in Knowledge Mobilisation group at Keele University.

My heartfelt thanks go to my family and friends who have kept me grounded on this journey. To my parents, without their continual love and support this would have not been possible. To Gill Swaites for the many hours of proof reading. And finally, to my husband Will, who has been my biggest supporter and has tirelessly provided me with emotional and practical support.

Chapter 1: Introduction

1.1 Thesis introduction

What is the point in dedicating a decade to research if it is just going to sit on the shelf?¹

Despite the vast evidence base underpinning best practice for the management of osteoarthritis (OA), research suggests that management of the condition is sub-optimal. Little is known about the reasons for the success or failure of implementation of evidence-based models of care for OA. This thesis explores the transition from research to primary care practice in OA management from a knowledge mobilisation (KM) perspective. A series of studies is presented in this thesis which examine evidence of the factors influencing the uptake of evidence-based recommendations for OA in primary care, and, identifies lessons learnt from a National Institute for Health Research (NIHR) programme grant research study and subsequent implementation project.

This chapter presents an introduction to the thesis. Firstly, introductions are given to OA, primary care and the evidence to practice gap. These introductions are reasonably brief, as issues relevant to this thesis are discussed in subsequent chapters. An overview of models of care for the non-surgical management of OA is presented, followed by an overview of an implementation project which sets the context for the research presented within this thesis. Following this, are the thesis aims, objectives and philosophical stance underpinning this work. Finally, the structure of this

¹ Quote by Hurley, cited in the Kings Fund report 'Adoption and spread of innovation in the NHS' (Collins, 2018)

thesis is presented including a brief overview of methods and outline of the content of the following chapters.

1.2 Introduction to osteoarthritis

OA is the most common joint disorder in the Western world and is one of the leading causes of pain, loss of function and disability worldwide (Murray et al., 2013b). Approximately 8.75 million people, or a third of people aged 45 years and over, in the UK have sought treatment for OA (Jordan et al., 2014, ARUK, 2013) and considering the ageing population and increase in risk factors for poorer health such as obesity and reduced physical activity, this is set to increase. Between 1990 and 2010 disability due to OA increased by 16% and this is now expected to have doubled by the year 2020 (Murray et al., 2013a, Lawrence et al., 2008). Despite the impact on health and the National Health Service (NHS) resources, OA remains an 'unrecognised public health priority' (Davies, 2012).

OA refers to 'a clinical syndrome of joint pain accompanied by varying degrees of functional limitation and reduced quality of life' (NICE (2014b) p.4) and commonly affects the knee and hip, and joints in the hand and foot, although can affect almost any joint. As a result, people with OA may experience varying degrees of pain, joint stiffness, reduced mobility, and difficulty in undertaking activities of daily living. The impact of OA on a person depends on which of their joints, and how many, are affected, their loss of range of movement and the amount of pain they experience (Finney et al., 2017). The condition can be a substantial barrier to mobility and independence, compromising wellbeing, and quality of life. OA is therefore associated with increased costs for healthcare systems and organisations as well as societal costs including workforce and productivity loss (Hunter et al., 2014).

National and international guidelines for the management of OA have been published by governing bodies such as the National Institute of Health and Care Excellence (NICE), the European League Against Rheumatism (EULAR) and Osteoarthritis Research Society International (OARSI) (NICE, 2014b, Hochberg, 2007, Zhang et al., 2008, Zhang et al., 2007, Jordan et al., 2003). The 2014 NICE guidelines on the care of people with OA sets out the recommended treatments for OA in the order in which they should be considered, taking into account the different needs, risk factors, and preferences of individuals with the condition. The three core treatments that NICE (2014) recommend should be offered to all people with OA are exercise (including strengthening exercise and aerobic fitness), education (to include accurate verbal and written advice, and information on the nature and treatment of OA), and interventions to affect weight loss if necessary (NICE, 2014b). Paracetamol and topical nonsteroidal anti-inflammatory drugs are recommended for first-line analgesia. Other non-core treatments recommended for those with ongoing problems include non-pharmacological approaches (such as hot and cold therapy, supports and braces, and shock absorbing shoes), and pharmacological interventions (such as intra-articular steroid injections, oral non-steroidal analgesia or capsaicin). It is recommended that the core treatments are tried for a minimum three-month period prior to onward referral for consideration for joint replacement surgery.

1.3 Introduction to primary care

Primary Care is defined by the World Health Organisation (WHO) as 'the first level of contact of individuals, the family and the community with the national

health system and constitutes the first element of a continuing health care process' (WHO, 1978). Approximately 90% of patient contacts take place in primary care in England (Lau et al., 2015) and hence this is the setting where OA is predominantly managed. Of the 340 million general practice consultations which occur in England every year, approximately 30% are for musculoskeletal conditions, and, one in six overall visits are for arthritis (Jordan et al., 2010, Thomas et al., 2004). Whilst primary care comprises a range of community services and groups of health professionals, the focus of this thesis is specifically the general practice setting.

It is well recognised that general practice is facing a host of unprecedented challenges including a workforce crisis in recruitment and retention, together with a rising and increasingly complex caseload (Baird et al., 2018). In 2014 there were 340 million general practitioner (GP) consultations in England, an increase of almost 12% over five years, yet evidence suggests that investment in primary care is not sufficient to keep up with increasing demands for GP services (BMA, 2015, Commission, 2015). The difficulties surrounding GP recruitment and retention and a depleted workforce are well recognised. Current and forecast staff shortages are affected by workforce factors such as staff 'burn-out', GPs choosing to retire early and undertaking part-time clinical roles as a response to workload pressures (Baird et al., 2016). This is compounded by the demands of multimorbidity (the presence of two or more chronic medical conditions in the same person) which affects one in six patients in the UK (Salisbury et al., 2011). Multimorbidity is also associated with increased healthcare utilisation, high treatment burden and complex management strategies (Wallace et al., 2015).

A lack of integration of professionals and services in primary care has also been reported as an important challenge for providing quality care for increasing numbers of patients (Baird et al., 2016). As such, innovative models of general practice delivery which utilise a range of professionals and broader team working is suggested as ways to address these pressures (Murray, 2019, Baird et al., 2018). As a result, huge variability in staffing models, team composition and organisational structures are seen within primary care organisations. Changing roles and responsibilities of healthcare professionals (HCPs) whilst developing alternative models of care are becoming more commonplace. For example, First Contact Physiotherapy (FCP) is a rapidly developing approach in the NHS, whereby patients presenting with a musculoskeletal condition in general practice are offered an appointment with a specialist physiotherapist instead of a GP. The expansion of the nursing role, development of the advanced nurse practitioner, and the physician associate roles are examples of alternative models of general practice service delivery (BMA, 2017).

1.4 The evidence to practice gap and knowledge mobilisation

Research has consistently shown that many effective interventions are not commonly used in practice and significant delays exist in translating research findings into clinical practice (Morris et al., 2011). Between 30-40% of patients do not receive care according to scientific evidence (Grol and Grimshaw, 2003). The delayed, or, lack of, translation of evidence-based medicine and complex interventions into everyday clinical practice and policy is known as the second translation gap or the evidence-to-practice gap (Woolf, 2008). This is particularly apparent in primary care due to the

complexity and multifactorial nature of the context (Lau et al., 2014, Salmon et al., 2007, Carlsen et al., 2007).

With respect to OA, despite an array of international guidelines that reflect the consistent body of evidence for best practice and the recommended management, evidence suggests that care remains suboptimal (Sakellariou et al., 2017, McAlindon et al., 2014). Published research has identified that the core approaches for managing OA are underutilised and that the quality of care for adults with OA is inconsistent (Porcheret et al., 2006). For example, in an interview study of 200 older people with knee pain, Porcheret et al. (2007) identified that only 16% of participants had received written information about managing their condition and less than half had ever tried exercise to help the problem. Furthermore, in many instances, the use of pharmacological interventions was self-initiated or recommended by a friend or relative rather than a HCP. The low rates of exercise prescription were also identified by Steel et al. (2008) who reported only 26% of eligible patients were prescribed an exercise programme and just 40% used paracetamol prior to other oral analgesics.

Many innovations designed to increase uptake of evidence-based practice (EBP) are complex interventions, that is, interventions with multiple interacting components requiring a change at multiple levels including individual, organisational and systems level. A major challenge to HCPs, researchers, managers, and commissioners is how best to implement research evidence in the form of complex interventions in clinical practice. Various strategies have been developed to accelerate the implementation of research into usable innovations in the real world, including the evidence-

based practice (EBP) movement, the development of clinical guidelines and a growing body of implementation research and theories to support these initiatives. A range of techniques or methods, known as implementation strategies, are aimed at optimising the adoption of complex interventions in practice (Proctor et al., 2013) yet despite this, a gap remains between utilising such strategies in everyday practice to exploit the evidence and optimise the uptake of innovations in the real world. There are therefore increasing calls for a change of paradigm from the production of research-based evidence to KM to focus efforts on the activities and processes by which research knowledge is accessed, applied and embedded at both systemic and individual levels (Rycroft-Malone, 2014).

1.5 Models of care for the management of osteoarthritis

The underutilisation of recommended strategies to prevent and treat OA has resulted in international efforts to implement models of OA care that focus on non-surgical management and reduce the evidence to practice gap (Allen et al., 2016). Between 2012 and 2013 the Research Institute (RI) for Primary Care and Health Sciences, Keele University, completed an NIHR funded OA programme to build on the NICE OA recommendations to optimise the care and management for people presenting in primary care with OA (Hay et al., 2018, Dziedzic et al., 2018, Dziedzic et al., 2014b). The Managing Osteoarthritis in Consultations (MOSAICS) study was a mixed-methods study, designed to evaluate the clinical and cost effectiveness of a 'model OA consultation' - a complex intervention designed to increase adherence to national guidelines for OA management in general practice (Dziedzic et al., 2014a). As part of the study, an OA e-template was developed, along with a

training package for practice staff. The study methods included a population survey, cluster randomised controlled trial (RCT), consultation, and medical record review, and an evaluation of the model OA consultation intervention and training. The components of the MOSAICS intervention that were tested in the trial comprised of i) an initial consultation with a GP followed by, ii) up to four appointments with a practice nurse in an OA clinic, and iii) the use of an OA Guidebook to support care. The patient-focused guidebook is available at:

http://www.keele.ac.uk/media/keeleuniversity/ri/primarycare/pdfs/OA_Guidebook.pdf [accessed 03.09.2016]

The MOSAICS study subsequently evolved into a national and international implementation project called the Joint Implementation of Guidelines for osteoArthritis in the West Midlands (JIGSAW). Since 2013, the JIGSAW implementation project has been established within the South Shropshire Locality Commissioning Group. The aim was to test out the practicalities of implementing the model OA consultation, informed by the NICE OA recommendations, developed in the MOSAICS study. JIGSAW aims to reduce clinical variation, improve EBP and improve patient satisfaction and clinical outcomes. The innovation supports primary care in addressing the unmet needs of adults with OA, through the provision of innovations (OA e-template, quality indicators, training, and patient materials) to support the systematic implementation of international guidelines and quality standards for OA at a practice level (Finney et al., 2019).

Following an award of EIT Health funding, The Joint Implementation of Guidelines for Osteoarthritis in Western Europe (JIGSAW-e) was launched

initially in five European regions. To date, JIGSAW-e has supported high-quality care being delivered to international patients, trained multidisciplinary professionals using a contemporary scientific understanding and engaged with primary and community healthcare organisations to ensure patients receive consistent messages about their OA. The JIGSAW-e innovations have since been recognised by national organisations, and, the Keele OA patient guidebook has been adopted by the UK and Dutch arthritis organisations. The Royal College of General Practitioners hosts the online-learning package developed for JIGSAW and NICE have endorsed the e-template for prompting and recording high-quality OA care.

In addition to MOSAICS, other OA programmes have been developed. These include the Beating osteoarthritis (BART) study in The Netherlands (Smink et al., 2011); Better management of patients with OsteoArthritis (BOA) in Sweden (Thorstensson et al., 2015); Enabling Self-management and Coping with Arthritic Pain through Exercise (ESCAPE)-pain programme in England (Hurley et al., 2007); Good Life with Arthritis in Denmark (GLA:D) (Skou et al., 2014); the PARTNER program in Australia (Hunter et al., 2018); and the SAMBA model in Norway (Osteras et al., 2015). Of these programmes, BART and PARTNER are set within general practice in primary care. ESCAPE and SAMBA are set within physiotherapy in primary care and BOA was developed and tested within a hospital setting. Any physiotherapist trained in the GLA:D approach is eligible to deliver the programme and so the context of this work may be primary, secondary and private settings. For further details about MOSAICS and these other models see Appendix 1.

1.6 Context to thesis development

The existing best practice models of care for OA described above are, by nature, complex interventions which are mostly concerned with (implementation) trials, yet little is known about the factors influencing the implementation and the practical application of these models of care in clinical settings.

Evidence regarding the implementation of the ESCAPE-pain programme reported in a publication by the Kings Fund (available at <https://www.kingsfund.org.uk/publications/innovation-nhs/escape-pain-programme>) highlights how the award-winning programme sustained implementation across England in over 100 sites. The report also describes some of the challenges of implementing the programme in UK primary care and illustrates the tensions between researchers, commissioners and the Academic Health Science Network (AHSN). For example, commissioners requested a shortened version of the programme to reduce costs, highlighting the challenges in persuading the commissioning system to contract for a new service due to issues relating to funding arrangements and contracts.

Uncertainty exists regarding the factors that influenced implementation in many of the other studies. Process evaluation and collection of pathway data on outcomes such as referral to physiotherapy, imaging, and orthopaedic surgery were collected in the SAMBA study which included a tailor-made implementation strategy (Osteras et al., 2015). The implementation strategy was developed at the outset of the trial, following three focus groups with HCPs to identify barriers and facilitators for implementing the SAMBA model.

A range of strategies including interactive workshops, educational material, educational outreach visits, feedback, and reminder material was used. The process evaluation from this study, however, is not yet published. Similarly, the PARTNER study protocol refers to an implementation intervention to support implementation and the planned assessment of barriers and facilitators to widespread implementation, yet, to date, this is not published. Despite the nationwide implementation of both the BOA and GLA:D programmes (in Sweden and Denmark respectively), the factors that influenced the process are unclear.

Whilst the models of OA care have considered and discussed the planning of implementation, a paucity of information regarding the evaluation of implementation exists. It is unclear whether these programmes were designed with a KM perspective or developed with KM principles embedded within them. Incorporating an additional stage to explore the transition between the research trials and real-world clinical practice may optimise the adoption of these models more broadly.

As not all of the OA best practice models are set in the context of primary care, which is where most OA care takes place, there is a gap in understanding of what happens when these models of care are adopted in general practice. Recommendations for the design and conduct of implementation trials for OA suggest that more rigorous implementation research is needed (Allen et al., 2015). In addition, more rich data, which is contextual and descriptive, is needed to evaluate the implementation of these models of care and to provide a detailed understanding of the variation in real-world adoption. Qualitative evaluation within such trials may provide

greater explanatory findings of implementation processes and outcomes which in turn may optimise implementation by exploring how models of care are implemented in local contexts.

The idea for this thesis was conceived by a group of researchers from the Impact Accelerator Unit (IAU) at the Arthritis Research UK (ARUK) (now Versus Arthritis) Primary Care Centre, Keele University. The JIGSAW implementation project provides the opportunity to explore the process of implementing OA best practice into real-world clinical practice by evaluating the UK program of work. The idea for an exploratory KM study emerged through these conversations and the work has been undertaken as part of an NIHR Knowledge Mobilisation Research Fellowship (KMRF) (for the director of the IAU) aiming to support primary care in addressing the unmet needs of adults consulting for OA.

Considering the burden of OA and the many programmes for managing the condition which may not 'fit' in different settings due to the context in which they were developed and tested, it is plausible that KM may hold the key to enhance the uptake of these new approaches in clinical practice, moving valuable research from 'the shelf' to the point of care.

1.7 Research question, aims and objectives

The research question for this thesis is, what factors influence KM in implementation for OA in primary care?

This thesis has two overarching aims:

1. To explore the process of KM and identify lessons learnt from a research study and implementation project which sought to optimise the care and management of OA in primary care.
2. To develop a toolkit to optimise KM for OA in primary care

These aims were undertaken by addressing seven more detailed objectives, which are presented in Box 1.

1. To review and appraise existing KM theoretical frameworks and select one or more to aid the analysis and interpretation of data in this study.
2. To gather views from stakeholders on the current evidence base for KM in primary care and implications of this for primary care practice.
3. To identify, appraise and synthesise available qualitative research evidence to investigate factors that influence the implementation of evidence-based guidelines for OA in primary care using existing published qualitative research and qualitative methods
4. To use qualitative methods to evaluate KM activity to share practice-based learning and to understand early adoption from a research trial.
5. To use qualitative methods to understand the experiences and perceptions of key stakeholders in an OA implementation project to identify the factors that optimised KM.
6. To synthesise findings from the thesis studies to develop draft recommendations to enhance KM relating to OA in primary care.
7. To use stakeholder consensus to refine the draft recommendations and develop a toolkit to optimise KM for OA in primary care.

Box 1 Thesis objectives

1.8 Philosophical assumptions underpinning this study

The epistemological and philosophical stance of a researcher is suggested to influence research design and methodology. It is therefore advocated that researchers explicitly state their position at the start of any study (Meyrick, 2006). A central epistemological issue within social research concerns the relationship between the researcher and the researched and how this influences data and interpretations (Ormston et al., 2014). This study adopts a position of *empathic neutrality* which recognises that research cannot be value-free and advocates that researchers make their biases, assumptions, and values transparent while striving as far as possible to be neutral and non-judgemental. A reflexive account is provided in Chapter 5 and referred to where appropriate throughout this thesis.

A pragmatic approach was adopted for this study. Pragmatism offers a solution to uncovering truth and verification that works within a social context (Putnam, 1995). Rather than conforming to the purist opinions of the two contrasting paradigms (positivism and interpretivism), pragmatism concerns itself with 'whatever works' by providing a theoretical lens concerned with solving practical problems whilst acknowledging the influence of actions, situations, and consequences in the 'real world' (Feilzer, 2010, Johnson and Onwuegbuzie, 2004).

This KM study in primary care aims to understand the factors influencing the implementation of interventions in real-world complex health systems (Peters et al., 2013). In deciding 'what works', pragmatism views reality as both single and multiple, postulating that theory and individual experiences of the phenomenon that provide beneficial social effects are required (Creswell and

Plano Clark, 2007, Rorty, 1999). This approach is appropriate for studying KM, whereby a combination of research evidence, moral judgments, and clinical experience are used to understand and work within real-world conditions (this is described in more detail in the following chapter) (Gabbay and May, 2011). Given the exploratory nature of the research aims and objectives, a pragmatic stance has been adopted by the candidate that acknowledges how knowledge is socially constructed through interaction with key actors. Placing importance on the research aims, rather than the methods, as the starting point to enquiry may require flexibility dependent on emergent findings (Peters et al., 2013).

1.9 Overview of thesis structure

This thesis makes use of a variety of data collection methods to develop an understanding of KM in primary care. These data collection methods occurred in distinct but sequential stages to build a picture of the complex interplay of factors influencing KM from a research study to implementation in clinical practice, and to develop a toolkit to optimise the process. This thesis is set out across ten chapters, illustrated in Figure 1.

Chapters 1 to 3 provide the context to the thesis and set the scene for KM, theoretical approaches to KM and the evidence and stakeholder views of KM for OA in primary care. Chapter 4 presents a systematic review exploring the factors that influence the implementation of evidence-based guidelines for OA in primary care. Chapter 5 sets out the thesis methods. Chapters 6 and 7 present the findings from two qualitative studies: firstly, results of secondary analysis of focus group data conducted at the end of the MOSAICS trial which explores the transition from a research study to real-world clinical practice and secondly, an interview study conducted to understand the uptake of a research intervention in the real world. The findings in chapter 4, 6 and 7 are brought together using a qualitative triangulation protocol, presented in chapter 8, in order to develop draft recommendations to inform the toolkit. Chapter 9 presents the results of a stakeholder engagement consensus exercise used to inform the development of the toolkit. The overall conclusions are presented in Chapter 10, including implications for future research and KM practice.

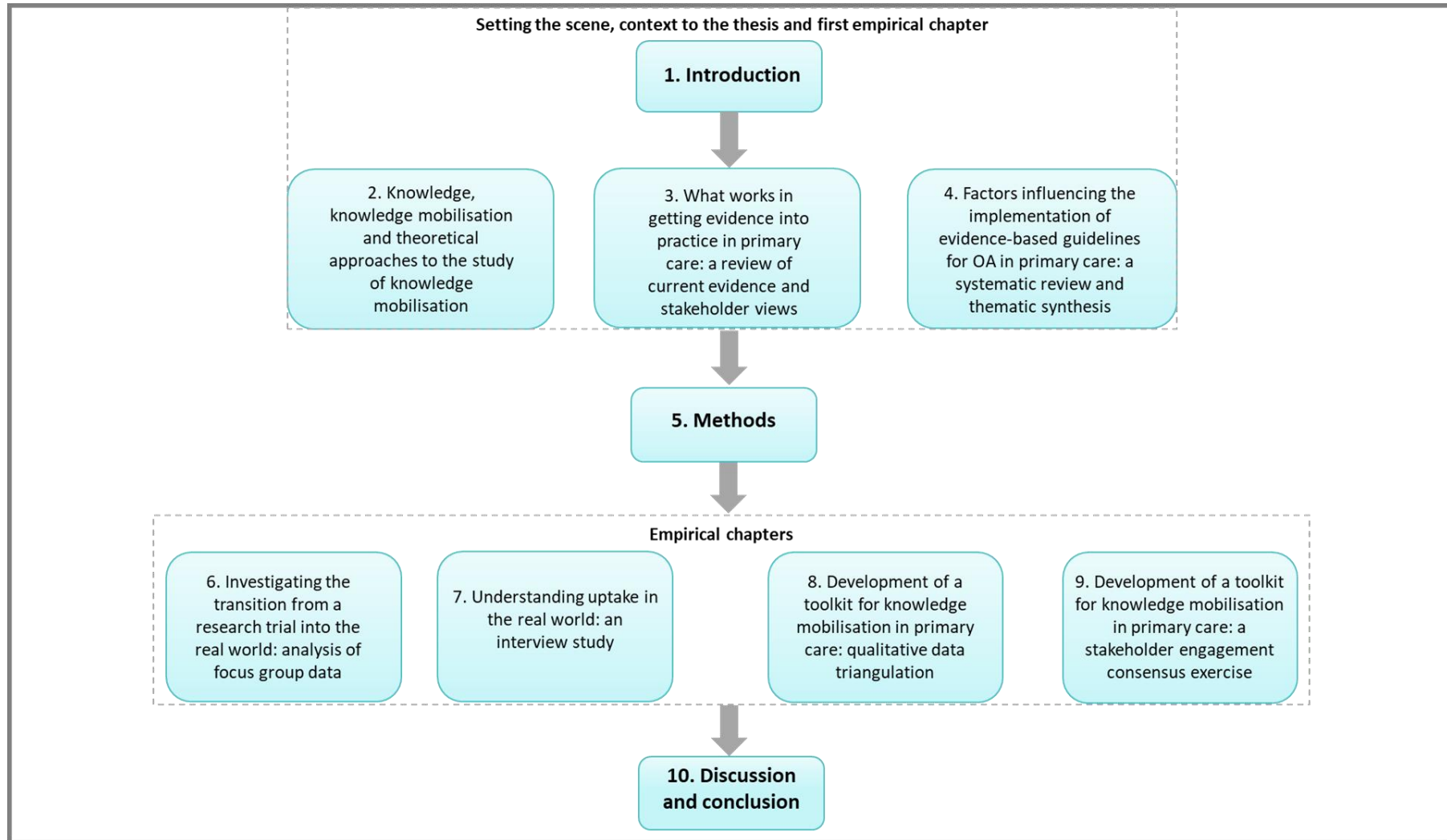


Figure 1 Thesis structure

1.10 Chapter summary

This chapter has introduced the thesis research and the main concepts and issues behind the study rationale. The research aims and specific objectives, along with the thesis structure have been presented. The next chapter discusses the concept of knowledge, KM and an overview of several theoretical approaches to studying KM relevant to this thesis.

Chapter 2: Knowledge, knowledge mobilisation and theoretical approaches to the study of knowledge mobilisation

2.1 Introduction

'Research in healthcare counts for little unless the findings and insights that emerge are shared, understood and used' (Davies et al., 2015)

The previous chapter introduced the aims of this thesis and provided an overview of current best practice models of care for OA. This chapter explores the conceptualisation of knowledge and the different types of knowledge needed to implement research findings in primary care. A detailed account of how knowledge is used and shared, along with an overview of knowledge mobilisation (KM), explanation of related terms, and some of the challenges of KM are then discussed. In order to explain the empirical work within this thesis, it is important to understand KM from a theoretical perspective. This chapter, therefore, goes on to present four theoretical approaches that help to explain and understand the factors that influence the process. Each theoretical approach is described, with a discussion about how it has been used in practice and then reflection on relevance for this thesis.

2.2 Overview of knowledge and basic concepts

Knowledge is a multifaceted concept and several assumptions regarding its nature and acquisition have evolved (Alavi and Leidner, 2001, Ferlie et al., 2016). In developing an evidence-based intervention, formal (or codified) knowledge such as research-based evidence in the form of RCTs or clinical guidelines, is often used (Nutley et al., 2008). This type of explicit and discrete knowledge has commonly been seen as the 'gold standard' of evidence and adopts a positivistic standpoint that knowledge is a single reality that can be readily transferred across time and place in a straightforward way (Crilly et al., 2013). Furthermore, the perception of knowledge as a product or 'thing' that is generated and generalisable across contexts, assumes a linear view whereby research evidence is produced, and changes in real-world clinical practice assumed (Horton et al., 2018).

One of the main limitations of this rational model of knowledge production is that it fails to take into consideration the interactive human and social factors that are embedded in healthcare settings. Similarly, it negates the need for personalised knowledge that accounts for the unique emotional and psychological factors that contribute to decision making and human action. For example, are clinicians aware of the research evidence, how do they feel about it, and can they change their practice as a result? Another problem with the approach is that it privileges research-based knowledge with the opinion that RCTs give rise to a superior knowledge type. A limitation of this viewpoint is that one of the methodological strengths of the RCT, the ability to eliminate or control contextual factors, may limit the ability for an organisation to use research findings in clinical practice due to competing

priorities or lack of applicability to the whole patient population (Nutley et al., 2008). In addition, complex interventions are social and embedded within context due to processes and mechanisms involving healthcare staff, patients and carers, which in turn implicates the knowledge produced when tested in trial conditions (Horton et al., 2018). Therefore, a criticism of this simplistic view is that it fails to recognise the interaction of knowledge with key actors such as highly skilled clinicians treating patients with complex needs (Nutley et al., 2008). These issues combined with the fact that patient management in primary care is not always in line with recommended guidance suggests that successful implementation of research-based evidence in primary care requires more than research-based knowledge (Lau et al., 2016, Broadbent et al., 2008, Porcheret et al., 2007).

A contrasting viewpoint postulates that knowledge comprises multiple realities and is socially constructed, related to group development and action (Ferlie et al., 2016, Eccles et al., 2009). This standpoint supports the need for tacit knowledge, a more personal knowledge that is not easy to describe, communicate or formalise because it is rooted in actions and experiences within a certain context (Alavi and Leidner, 2001, Nonaka et al., 1996). This aligns with social constructivism, a theory of knowledge which denies absolutes and suggests that knowledge is a human product which is socially and culturally constructed in an active manner (Bryman, 2008, McInerney, 2002).

Importantly, the real-world circumstances of one general practice may vary significantly compared to another and so the factors affecting HCPs in implementing an evidence-based intervention may be very different. Tacit

knowledge is practice-based and learned by 'doing' and involves cognitive and technical elements (Nonaka et al., 1996). Commenting on tacit knowledge, Crilly et al. (2013) state that it is an 'embedded capability', such as, the clinical knowledge demonstrated by an experienced HCP. An example of this might be seen in the scenario of breaking bad news to a patient or carer. It is only after experiencing the scenario and the associated complexities of breaking bad news, that tacit knowledge informs decisions made by the clinician when next faced with the same situation. With this standpoint, knowledge is said to be part of what people do and who they are, not a thing that people have; similarly, primary care HCPs and managers may have different assumptions and perceptions of knowledge (Dopson, 2013). Knowledge is seen as being social and relational which, in the context of primary care, relies on the experiences, decision making, and interactions between patients, clinicians and commissioners (Davies et al., 2015, Waring et al., 2013).

On balance, neither perspective or type of knowledge is sufficient (or more superior) in closing the evidence to practice gap in primary care (Contandriopoulos et al., 2010). In a seminal paper that advances thinking regarding contextual, socially embedded knowledge, Gabbay and le May (2004) challenge the notion of knowledge being generalisable and replicable in informing clinical practice and propose the concept of 'clinical mindlines'. Their ethnographic study in UK general practice provided a new perspective on knowledge and its practical application in healthcare by suggesting that clinicians base their decisions on internalised and collectively reinforced tacit guidelines. Interestingly, they found that mindlines were informed by interactions with colleagues, opinion leaders, and patients, therefore

acknowledging multiple realities and complexities involved in clinical decision making (Wieringa and Greenhalgh, 2015). The authors argue that to inform effective practice, knowledge must be dynamic and responsive to changing individual, professional and organisational demands. Furthermore, they propose that diverse forms of knowledge are continually being built into these mindlines and result in 'knowledge-in-practice-in-context'. The authors conclude by suggesting that closer relationships between academia and practice may strengthen the ability for research evidence to contribute to 'knowledge-in-practice-context'.

The conceptualisation of mindlines is applicable to the implementation of an evidence-based intervention in primary care as it reflects the combination and amalgamation of several forms of contextual knowledge including research findings, cost, resources, and previous experiences. For example, clinical guidelines are a type of knowledge which is accessible to health professionals but does not reflect the pragmatic practice-based needs for evidence or offer practical solutions to complex patient scenarios (May et al., 2007). The mindlines theory proposes a flexible approach that transforms knowledge from research evidence to the knowledge that is useful in practice and relevant to local general practice populations.

Primary care practice requires politically and organisationally contextual knowledge in clinical decision making and implementation (Wye et al., 2015, Ward et al., 2012). Organisational (or pragmatic) knowledge is knowledge deemed useful by general practice organisations and is important because general practices are faced with ever-changing environments which may impact their ability to implement research findings (Alavi and Leidner, 2001).

The nature of an ever-changing environment illustrates the constructivist viewpoint that knowledge construction is in a constant state of revision and dependent on social interaction between social actors (Bryman, 2008). Interestingly, organisational knowledge is suggested to be constructed by continual interaction and dialogue between tacit and explicit knowledge which is relevant to implementation requiring a blend of research-based evidence, and collective mindlines that incorporate norms, values and experiences of organisational stakeholders to optimise the process (Nonaka et al., 1996).

In deciphering what constitutes knowledge, two questions for consideration are: Who is considering the knowledge, and, what is the knowledge being used for? (Crilly et al., 2013). In primary care, knowledge is much broader and richer than packaged research findings; knowledge and evidence alone is insufficient in changing clinical practice and improving patient care (Nutley et al., 2008). Evidence suggests that managers within primary care use several sources of knowledge, but personal experience and seeing 'what works' in other practices may have greater influence over the adoption of a new innovation than formal evidence (Edwards et al., 2013). The coexistence of multiple types of knowledge is required to account for individual and organisational motivations and needs, thus reflecting social processes and interactions (Crilly et al., 2013). Furthermore, services can also be influenced by practice-based evidence such as audits and service evaluations which provide evidence in context, which is frequently lacking in even the most pragmatic of RCTs. The integration of formal research-based evidence and several different sources of practitioner knowledge and situated knowledge within organisational contexts, influences decision making (Swan et al., 2017). Furthermore, in general practice, implementation depends on

knowledge application across functional interfaces such as academia, policy, and practice (Alavi and Leidner, 2001). The following section considers how various types of knowledge are used and shared, and some of the strategies utilised in implementation.

2.3 How knowledge is used and shared

2.3.1 The historical context of knowledge mobilisation

Knowledge use and the concept of moving knowledge into action is reportedly confusing and misunderstood (Graham et al., 2006). The growing body of literature and diverse terminology to describe the process of getting knowledge used in practice is well recognised (Davies et al., 2015). Multiple terms and definitions for knowledge use and sharing exist as a result of the evolution and advancement of thinking around the concept over recent years. Despite variation in terminology, the shared concept of these definitions focuses on harnessing the benefits of research and utilising evidence to improve the quality of clinical practice (Gabbay et al., 2003). This section presents the rapid evolution and historical context to KM as a concept, along with an overview of some of the commonly used terms to reflect the recent adaption and challenges associated with terminology in the field. A schematic representation of this is presented in Figure 2.

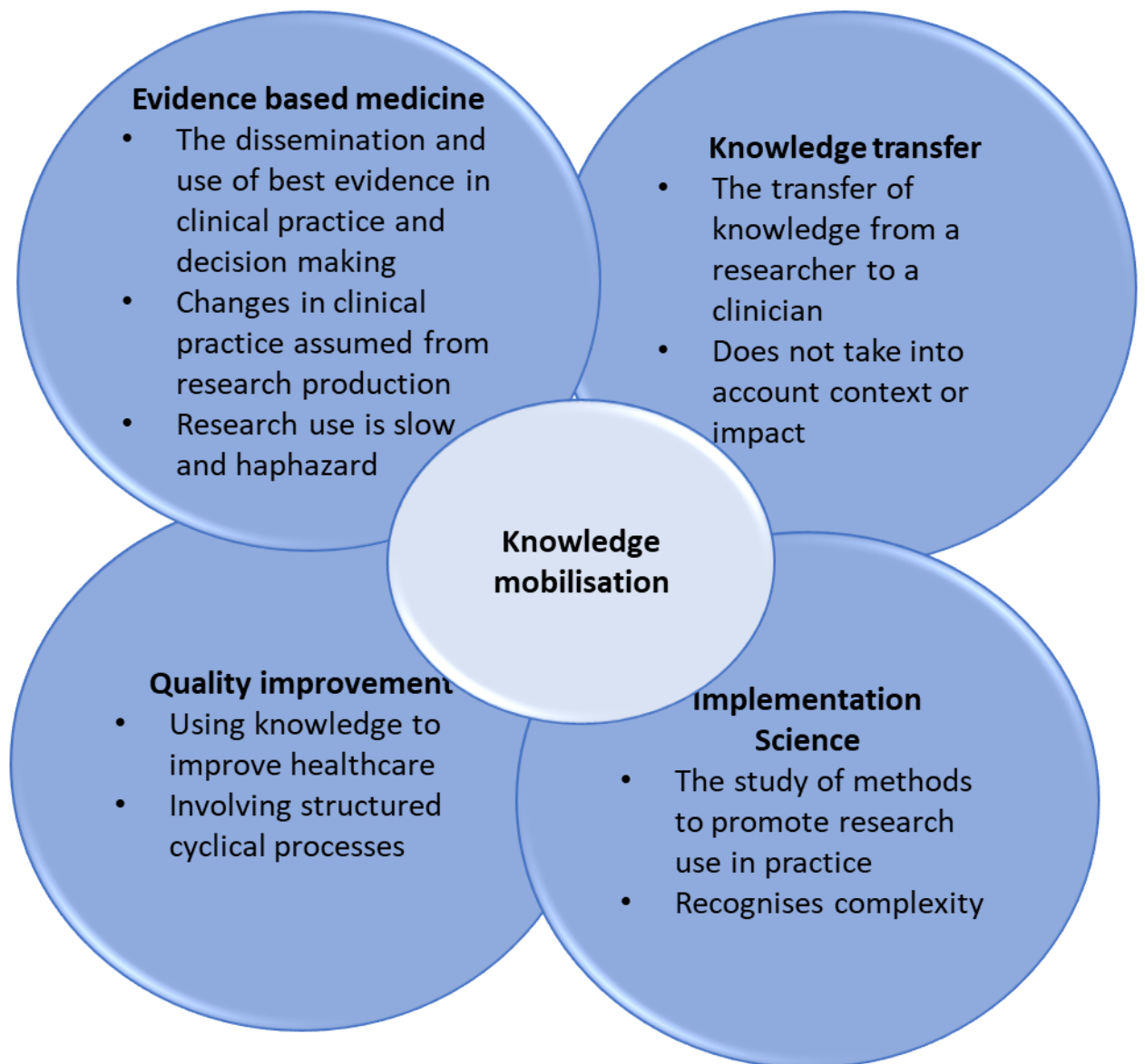


Figure 2 Schematic representation of some of the key concepts that have come together in the evolution of knowledge mobilisation

Evidence-based medicine

Variation in clinical practice led to an initial push to create robust knowledge on which to base healthcare decisions, known as evidence-based medicine (EBM) or evidence-informed healthcare or decision making (Sackett et al., 1996). This was driven by the lack of translation of research findings and the recognition of the second translation gap (Cooksey, 2006). The EBM paradigm assumed a hierarchy of evidence whereby evidence from high-

quality RCTs and observational studies, in combination with the clinician and patient knowledge would lead to changes in delivering consistent care thus helping to reduce the divide between research and the real world (Greenhalgh et al., 2014). This approach to the use of research knowledge in practice suggested a one way, researcher-driven agenda whereby academia produces research knowledge that is disseminated, 'pushed', or transferred to clinicians, and its application in practice is assumed (Nutley et al., 2008). Dissemination and knowledge transfer involves the targeted distribution and transfer of knowledge from researchers to clinicians, however, these terms fail to take into account the context and impact of the transfer of knowledge (Brown et al., 2017, Graham et al., 2006).

Despite many successes within EBM, the approach has been criticised as wide variation in implementing EBP remains (Greenhalgh et al., 2014). Key problems with the approach include the potential for discordance between the research produced and the knowledge needs of the recipients, the assumption that evidence production alone is sufficient in achieving changes in clinical practice that benefit patients, and the consistent finding that the transfer of research findings into clinical practice is slow and haphazard (Eccles et al., 2009).

Implementation science

Progressive conceptualisations recognise that linearity cannot be relied on for the successful sharing of knowledge. Robust research to inform decisions regarding healthcare practice and policy and focussed efforts to promote the uptake of evidence-based knowledge into practice is required (Davies et al.,

2015). Implementation science has developed as a discipline to address these issues (Bauer et al., 2015).

Implementation is the process of putting knowledge into practice and implementation science has been defined as '*the scientific study of methods to promote the systematic uptake of research findings and other evidence-based practices into routine practice, and, hence, to improve the quality and effectiveness of health services*' (Eccles and Mittman, 2006). Implementation science accommodates a shift in thinking towards a more complex systems model which encapsulates a broader view of how relationships between academia and clinical practice complexities relate at an individual, organisational and systems level. Influential work by Best and Holmes (2010) introduces the concept of 'systems thinking' and proposes that successful evidence use can be facilitated by working *with* complex systems rather than trying to simplify or control them. Importantly, a greater focus on local contextual nuances within organisational systems and networks may reveal the need for different multi-faceted approaches to implementation to account for factors such as funding, resources and competing priorities (Levin, 2011, Nutley et al., 2008).

The increasing body of implementation research literature addresses issues relating to planning, understanding, explaining and evaluating the implementation of complex interventions in healthcare (May, 2013). In recognising complex systems, implementation research acknowledges real-world conditions rather than controlling for them and recognises context as an important component (Peters et al., 2013). Despite the vast body of

literature in the field, implementation research is suggested to not be well understood (Peters et al., 2013).

Quality improvement

Quality improvement is another commonly used method, incorporated under the umbrella term of implementation science, for sharing knowledge to improve healthcare and involves structured cyclical processes such as the plan-do-study-act (PDSA) cycle (Peters et al., 2013, Speroff and O'connor, 2004, Davidoff et al., 2008). Quality improvement aims to improve the quality of care such as safety or patient experience. Change is often fast (over a period of weeks in comparison to research which may take months or years) and rewarding, with changes occurring in multiple different components simultaneously (Marshall et al., 2017, Dixon-Woods et al., 2012).

Knowledge transfer

Terms such as knowledge transfer and dissemination support linear processes and tend to imply a consumer model of knowledge use. Knowledge transfer, however, does not take the context and impact of moving knowledge into account. These terms were commonplace five years ago but the rapid shift in viewpoints mean that now it is recognised that 'transfer' is not as appropriate as once thought and may not be the best way of creating and using knowledge.

Contemporary terms including knowledge translation, knowledge to action, knowledge exchange and KM, suggest a multi-faceted approach and recognise the reality that knowledge sharing strategies are not neat, linear

process, but messy and unpredictable (Levesque et al., 2007, Mitton et al., 2007, Graham et al., 2006). The recognition of complexity and need for collaborative approaches are essential for successful knowledge implementation, utilisation and evaluation in policy and practice decision making via interactive exchanges. Progressive thinking in the field acknowledges that traditional views of academia as a knowledge provider and healthcare as its recipient are being replaced with more collaborative approaches.

Knowledge mobilisation

The term KM encompasses the dissemination and implementation process which aims to close the research to practice gap (Rowley et al., 2012). KM is also related to getting the right information to the right people in the right format to where it will be most useful (Ward, 2017). Levin (2008) describes how KM refers to the relationship between research and practice and emphasises the multidimensional, longer-term and often political nature of the work. This is in contrast to earlier terms that seem to imply a one directional and linear process of getting evidence into practice which may be viewed as naïve and far from what is required for successful KM. KM bridges the gap between knowledge generated by research and the impact of the research on clinical practice (Gabbay et al., 2003). It recognises that additional action, support, processes, and engagement need to take place in order to bridge the gap between evidence and practice (Ferlie et al., 2012) and how relationships, networks, and social processes may be the vehicle for success (Ferlie et al., 2012, Lomas, 2007, Gabbay et al., 2003).

There are many challenges related to KM. For example, conceptual challenges exist relating to the varied terminology used, the multitude of conceptual models and frameworks that may not be accelerating the process as expected, and a lack of agreement on the main issues required for working across disciplines. The array of terms used to describe all or part of the process can be confusing (Graham et al., 2006). The terms used may mean very different things to different professional groups and the ways in which stakeholders use and interpret knowledge and the language associated with KM may vary. For example, an academic involved in implementation, or a pure theorist, may have more fixed perceptions compared to those who action KM (the doers) who may be more accepting of the morphing and interchangeable use of terms. The range of priorities across multiple stakeholders such as academia and healthcare commissioning, for example the timescales in which evidence is required to make decisions, do not sit comfortably together, making it difficult to address the needs and meet the requirements of all stakeholders. Separate yet vast bodies of literature and conceptual study relate to KM as it is drawn from several disciplines including sociology, education, management, and psychology, again making it challenging to apply in clinical practice. In addition, KM is somewhat reliant on organisational cultures being receptive (and ready) for change as they may be entrenched in historical ways of working.

In order to get better 'buy-in' or engagement with KM, adopting and using a language that each professional group understands, values and potentially engages with more may be beneficial.

2.3.2 Definitions for thesis

In this thesis, knowledge use and sharing are conceptualised within the broader process of KM and the ongoing exchange between research and practice (Nutley et al., 2008). A pragmatic action point of view is taken which recognises and accepts research evidence, implementation, quality improvement and all the elements discussed in this chapter, as part of KM processes. This thesis is concerned with understanding the process of how knowledge is mobilised between functional, organisational groups, and across boundaries to overcome complex issues relating to implementation in local primary care environments, and therefore uses the term KM.

Several definitions of KM have informed the conceptualisation of the term within this thesis. KM is defined throughout this thesis as '*a proactive process that involves efforts to transform practice through the circulation of knowledge within and across practice domains*' (Swan et al., 2016) which involves a range of activities that encourage the collation and communication of knowledge (Ferlie et al., 2016, Davies et al., 2015).

Understanding how KM has developed and evolved and how progressive thinking in the field is changing rapidly can provide insights into the interchangeable use of terms such as knowledge translation, implementation, and KM. Throughout this thesis, these terms are frequently used interchangeably as this reflects where the discipline of KM has come from historically. Where possible the candidate uses the term KM; however, when referring to existing literature, alternative terminology may be used and referred to. Despite the recognised need for conceptual clarity, the essence of sharing knowledge and supporting the development, assimilation, and

application of the best available knowledge and evidence to improve outcomes and efficiency for all relevant stakeholders is central to this thesis. The issues discussed in this section will likely continue to change and evolve as more is learnt about the discipline of KM.

2.3.3 Approaches to knowledge mobilisation

The common metaphors used to describe the collection of activities used to link research to action are: 'push', the efforts concerned with bridging or spanning the gap, such as researchers sharing their findings with HCPs; 'pull', the capacity of HCPs or organisations to identify and utilise the knowledge required; 'linkage' and 'exchange', which concerns key stakeholders developing meaningful partnerships to jointly produce and address appropriate clinical questions (Davies et al., 2015, Lavis, 2006).

Linkage and exchange efforts may facilitate a reduction of the evidence to practice gap and improve the relevance and use of research in real-world practice (Lomas, 2000). This concept aligns to systems thinking as it involves the ongoing development of partnerships between research producers and users to optimise implementation (Lomas, 2000). A growing body of research supports the view that knowledge can be mobilised using a boundary-spanning approach whereby individuals that sit across one or more organisations can share knowledge, skills, and ideas across networks. Despite the increased evidence base, research regarding the effectiveness of boundary spanners is inconclusive and politics is suggested to influence knowledge sharing across sectors and professional boundaries such as between academia, commissioners and clinicians (Bornbaum et al., 2015, Currie et al., 2007).

This has been described by Lomas (2000) as the principles of linkage and exchange which are referred to as "*a promising way to increase the relevance and use of health service research*". Initially, the linkage and exchange philosophy was a Canadian initiative with the aim of encouraging partnerships between researchers and policymakers, it is now recognised as an approach to KM (Davies et al., 2016).

"By whom should research knowledge be transferred?" (Lavis et al., 2003)

Knowledge brokering is one strategy that supports the understanding of the complex culture in primary care whilst fostering relationships that may facilitate knowledge to action via communication between key stakeholders (Davies et al., 2015). A knowledge broker has a boundary spanning, intermediary role positioned at the interface between researchers and practitioners to bridge the two communities and increase knowledge use (Nutley et al., 2008, Lomas, 2007). Clinical academics are conduits to knowledge communities and may facilitate knowledge flow whilst ensuring it has a positive impact on its users (Kislov et al., 2016, Davies et al., 2015). These roles are not new, however, more recently the role of the knowledge broker has come to the forefront and is recognised in facilitating practical initiatives to mobilise knowledge and strategies to better promote research uptake, whilst navigating the complex nature of healthcare systems (Kislov et al., 2016).

In considering the complexities and variation amongst general practice organisations, co-production of both research knowledge and the implementation plan may enhance KM and mitigate some of the challenges

faced by primary care organisations in implementing an evidence-based intervention. Co-production, often termed co-creation, is '*the collaborative generation of knowledge by academia alongside other key stakeholders from multiple relevant sectors*' (Greenhalgh et al., 2016) and challenges the perspective that research production and use are separate entities (Nutley et al., 2008). A report by Swan et al. (2012) found that local knowledge emerged through co-production and had greater influence in commissioners' decision making than scientific knowledge. Furthermore, the study findings demonstrate how co-production resulted in more widely accepted solutions to clinical problems. By using experiential knowledge of key stakeholders to drive the co-production of practice-based evidence, more relevant, contextual knowledge may be produced and used thus alleviating potential challenges of KM by ensuring that research is focussed and appropriate for users (Holmes et al., 2017).

There are many reported benefits of co-production including appropriate processes and outcomes; consultative nature; increased uptake of knowledge to inform policy and practice; smoother translation of findings; focussing on 'real world' considerations; (Greenhalgh et al., 2016, Janamian et al., 2016, Swan et al., 2016, Ferlie et al., 2016). However, successful co-production depends on several requirements such as time investment, resources, coordination of 'all parties', and buy-in from management systems (Janamian et al., 2016). Whilst co-production is not without its challenges it does present a pragmatic solution to providing contextual knowledge for primary care.

2.4 Summary of knowledge and knowledge mobilisation

KM is recognised as complicated and inextricably linked to multiple systems, organisational and personal factors. Unsurprisingly, in primary care, a range and combination of strategies that are contextually relevant may optimise the process. It is not fully understood which strategies work best in which circumstances (Nutley et al., 2008). The following section explores how theoretical perspectives are useful in explaining KM issues in primary care organisations and then presents and discusses four theoretical approaches that are relevant to this thesis.

2.5 Theoretical approaches to knowledge mobilisation

Mounting pressure is exerted on researchers, managers, and HCPs, by service providers, to ensure that the delivery of care is evidence-based and clinically effective. The mobilisation of research evidence in primary care is however, complex. Challenges with KM in primary care include the inability to replicate and repeat implementation of research and a lack of a systematic approach to the evaluation of the uptake of evidence due to the inherent contextual differences in each practice setting (Grol and Grimshaw, 2003). There is a growing awareness of the important role that theories, models and frameworks play in optimising the process (Eccles et al., 2009).

One of the difficulties with selecting and utilising theories, models and frameworks is that the difference between them is not clear and the terms are often used interchangeably and imprecisely (Nilsen, 2015, Bauer et al., 2015). A theory comprises a set of analytic principles or statements designed to structure our observation, understanding and explanation of the world (Nilsen, 2015). A key feature of a theory is that it typically incorporates an element of explanation relating to the relationship between the constructs (Bauer et al., 2015, Davidoff et al., 2015). A model however provides a simplification of a more complex world phenomenon and operationalises a theory. Models often include clear assumptions relating to cause and effect (Bauer et al., 2015). Frameworks on the other hand provide a structure or overview of descriptive categories but do not provide explanations of causal relationships between the constructs. Frameworks include a broad set of constructs that organise concepts and data descriptively or clear steps for planning or undertaking implementation (Davidoff et al., 2015, Nilsen, 2015).

Utilising theoretical approaches to underpin KM in research and implementation activities can increase the likelihood that interventions are adopted by clinicians and patients, and is central to understanding and explaining the reasons for the success or failure of the uptake of best evidence into practice (Eccles et al., 2009). It can also focus attention on what action may be required to address the implementation-related issues pertinent to stakeholders.

Whilst informing and underpinning KM activity with theory may be advantageous, there may be several challenges to applying this in practice. A plethora of theoretical models and frameworks exist to guide KM processes (Davies et al., 2015), however, the extensive menu of possible options makes it challenging for stakeholders to identify and select relevant approaches (Lau et al., 2016). As yet there is no consistent approach that guides stakeholders to plan, design, deliver, and evaluate the impact of implementing new research evidence in the context of primary care (Nilsen, 2015).

Nilsen (2015) proposes a taxonomy of five categories to synthesise and clarify the abundance of implementation theories, models, and frameworks (Figure 3). Whilst Nilsen (2015) describes the approaches as *implementation theories, models or frameworks*, Davies et al. (2015) discusses several of the same approaches as KM theories, models and frameworks.

The taxonomy developed by Nilsen (2015) is categorised into theoretical approaches that assist with (i) planning and guiding, (ii) understanding and explaining or (iii) evaluating implementation. The range and variety of approaches may reflect the challenges and uncertainty around how and why implementation takes place and how the underpinning science for implementation is used.

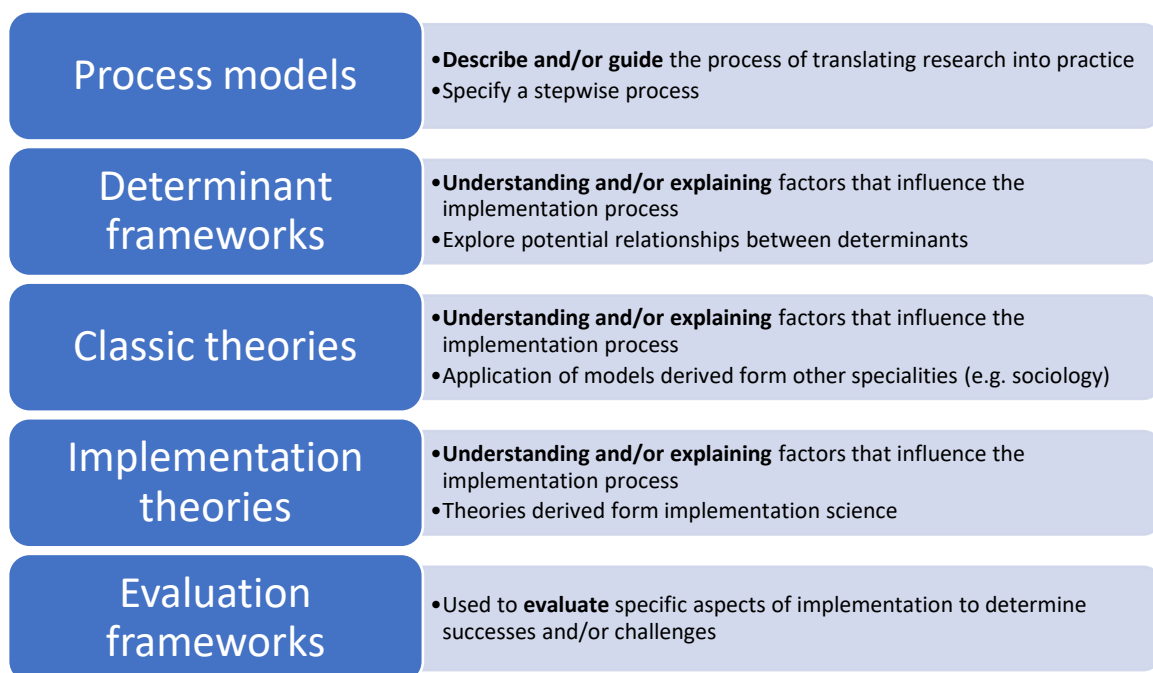


Figure 3 Theoretical approaches used in implementation (adapted from Nilsen 2015)

2.6 Theoretical approaches relevant to this thesis

In exploring a theoretical approach for use in this thesis, theories relating to understanding and explaining implementation have been drawn upon as these relate directly to the thesis research questions. Four approaches were identified from determinant frameworks, classic theories and implementation theories, which are relevant to understanding and/or explaining implementation, for potential use in this thesis (Nilsen, 2015): Normalisation Process Theory (NPT), Community of Practice (CoP), Absorptive Capacity

(ACAP) and the Integrated Promoting Action on Research Implementation in Health Services (i-PARIHS) framework. For each approach, an overview is presented, followed by evidence of application of the theory in practice and discussion of relevance to the thesis.

2.6.1 Normalisation Process Theory

Overview

Initially conceptualised as a model, Normalisation Process Theory (NPT) is used to describe, assess and enhance implementation activity by explaining the processes in which complex interventions become sustained or routinely embedded, in their social context (healthcare practice) (May et al., 2007). NPT is now considered an action theory which draws on implementation theory and is concerned with explaining what people do rather than their attitudes or beliefs (May and Finch, 2009, May et al., 2009). The NPT approach was developed to guide and inform the planning, development, and evaluation of complex interventions and implementation processes and can be used by stakeholders throughout the research to practice journey. For example, NPT was used in the MOSAICS study as a framework for exploring aspects of adoption and implementation of the innovation (Hay et al., 2018).

The underlying premise is that normalisation is the point whereby an intervention is no longer seen as an additional process associated with research activity, but as part of routine practice (Murray et al., 2010) and that multiple factors are required to achieve this. For example, the interrelations between actors, mechanisms, and contexts involved in implementation (Finch et al., 2013). Implementation is dictated by the ways in which participants' work explores social production and organisation of that work (May et al., 2009).

The three propositions of NPT (May and Finch, 2009) are presented in Box 2.

1. Complex interventions become routinely embedded (implemented and integrated) in their organisational and professional contexts as the result of people working, individually and collectively, to implement them.
2. The work of implementation is operationalised through four generative mechanisms (coherence; cognitive participation; collective action; reflexive monitoring).
3. The work of integration of a complex intervention requires continuous investment by people in ensembles of action that carry forward in time and space.

Box 2 The three propositions of Normalisation Process Theory (May et al., 2009)

NPT proposes that stakeholders must understand and make sense of information, then work with other key individuals around the new complex intervention, before operationalising the new practice. NPT recommends appraising the new set of practices to understand how they 'fit' within a setting (May et al., 2015). The four dynamic constructs of NPT are shown in Figure 4 and described in more detail below.

NPT consists of four key stages: i) Coherence, ii) Cognitive participation, iii) Collective action, and iv) Reflexive monitoring (Figure 4). These constructs represent the processes and generative mechanisms of social action and encompass factors that enable, or impede routine embedding of an innovation. The constructs also relate to the work that individuals or teams undertake throughout the implementation process (May et al., 2015).

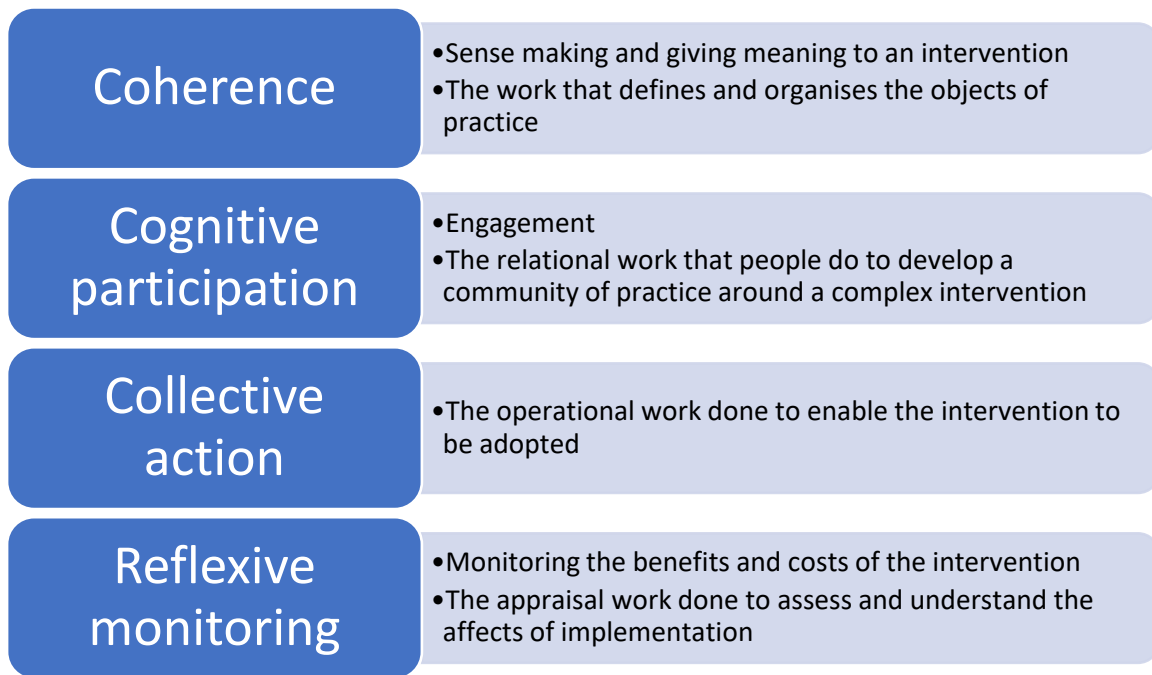


Figure 4 The constructs of Normalisation Process Theory (May et al., 2015)

- (i) **Coherence:** involves both individuals and groups 'making sense' of a new set of practices or complex intervention. This includes understanding the components of the intervention and how they differ to current practice, developing a shared understanding of the aims, value, and benefits of the new practice, and recognising individual responsibilities concerning the new practice and its potential value.
- (ii) **Cognitive participation:** is the collaborative relational work needed to increase the likelihood of achieving successful implementation. This is the planning or preparing for action phase which requires key individuals to champion the new practice and drive it forward. Developing communal engagement in the new practice may involve reorganising and engaging individuals to invest in and maximise the success of

implementation, whilst ensuring clarity in ongoing actions to sustain the practice.

- (iii) **Collective action:** concerns the action or 'doing' phase of implementation which aims to explain the work that stakeholders do to engage with and operationalise new interventions in everyday practice. Considerations of collective action include communication, building, and maintaining confidence in the new set of practices, and allocating roles, responsibilities, and resources.
- (iv) **Reflexive monitoring:** is concerned with stakeholders collectively agreeing how effective and useful the intervention is, how it impacts on individuals and teams within the organisation, and, if and where any practice requires modification to make it more workable in everyday practice.

Theory in practice

NPT has been used in studies among different populations in different contexts and has been suggested to be particularly helpful for informing research design and conduct (May et al., 2015, McEvoy et al., 2014). May et al. (2015) describe how NPT can be used in research trials, survey research, systematic reviews, and qualitative research. Published studies confirm the ability of NPT to: address issues whilst designing complex interventions; understand if trials are compatible with clinical contexts; ensure the intervention has good implementation potential; guide data collection and analysis; and guide interpretation of findings and recommendations both

empirically and theoretically (Ong et al., 2014, Kennedy et al., 2014, Pope et al., 2013).

The constructs of NPT have been reportedly helpful in identifying problematic features of implementation processes relating to the work involved in embedding a complex intervention, yet some studies have identified features of implementation that were less successfully captured through NPT. Kennedy et al. (2014) describe how NPT was useful in understanding whether an intervention for self-management support in long-term conditions (LTCs) was embedded in primary care at an organisational, professional and patient level. However, they reflected that NPT does not place enough emphasis on those who receive complex interventions, namely service users. Another critique of the approach is that it primarily addresses mechanisms, placing an emphasis on individual and collective agency without locating this within, and as shaped by, the organisational and relational context in which implementation occurs (Clarke et al., 2013).

A 16-item interactive toolkit (available at www.normalizationprocess.org/npt-toolkit) has been developed to help users to operationalise NPT and is a practical translation of the constructs of the theory. The toolkit evaluates the strength assigned to each of the 16 variables and produces a report that will help to identify any areas for stakeholders to consider in more detail. For example, where participants may not make sense of an innovation or if an innovation does not align with the practice and values of participants. In this respect, the toolkit provides an active, practical mapping and translation of NPT theory to real-life situations.

Summary and relevance to the thesis

Of the approaches presented in this chapter, NPT is perhaps the most commonly used in implementation research studies. NPT can be used to capture the process involved in implementing a complex intervention in healthcare settings and explain how participants understand, engage with, reflect on, and evaluate the implementation of a new practice (McEvoy et al., 2014). The approach permits verifiable knowledge claims and a rational foundation about processes and action pertaining to the implementation of innovations. NPT focusses on how knowledge is held, transferred, created within and across professional groups (McEvoy et al., 2014, Gallacher et al., 2011).

Whilst NPT seeks to understand the work that stakeholders do to engage in implementing knowledge into practice, greater consideration of the importance of the patient role may be needed for this thesis. Another issue that requires further consideration is whether NPT sufficiently reflects the nature of context to meet the needs of this thesis. In exploring barriers and facilitators, a theory that includes contextual factors (such as policy drivers) is of central importance. Furthermore, an approach that helps to understand the interaction and dynamic nature of context for implementation may be beneficial.

Despite these considerations, NPT is relevant to and can inform the empirical investigation of this thesis for several reasons. The approach has been validated extensively and proposes a set of analytic propositions that acknowledge the interaction of actors within their organisational context in influencing implementation. It also provides a foundation for explaining

observed events and processes. Further, NPT was used in the MOSAICS research study (Hay et al., 2018) and is therefore relevant to this thesis in understanding how the original research developed into an implementation project (JIGSAW).

2.6.2 Community of Practice

Overview

Seminal work by Lave and Wenger (1991) recognised learning as a social phenomenon established in experiences of the lived world. They challenged the assumptions of traditional cognitive learning theory and posit that the relationship between learning and social situations signifies how learning takes place within co-participation and not in the minds of individuals. CoP outlines an active approach to knowing and learning that recognises the importance of social groups and interaction in defining knowledge.

CoP, a theory of situated learning, suggests that social learning occurs as a result of becoming a member and developing an identity within a sustained CoP (Lave, 1991). Social, collective mechanisms can enable groups to address the complexity and scale of knowledge problems faced within their practice (Lesser and Storck, 2001). Whilst CoP concerns engaging in a process of collective learning, learning can either be the reason for the engagement, or an unintended consequence.

Derived from organisational research in the business sector, CoP is a knowledge management tool that creates a link between learning and enhanced organisational performance by understanding how knowledge helps to gain a competitive advantage (Wenger, 2011, Andrew et al., 2008, Wenger et al., 2002).

Wenger et al. (2002) define a CoP as:

"A group of people, who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis."

The theory states that: i) members share an understanding of a joint enterprise; ii) members interact, build relationships and negotiate meaning within the community; and iii) members, over time, produce a shared repertoire of resources as they become part of the collective practice. These characteristics (Box 3) develop in parallel and reflect how a group of individuals learn from each other through sharing insights, problem-solving and inquiry as a result of ongoing interactions around a particular domain (Denscombe, 2008).

Shared domain of interest represents the common knowledge being discussed
Community represents the joint activities and discussions whereby interactions and learning take place, and participants build relationships
Practice represents the shared repertoire of resources for the practice such as experiences, information, stories, tools, ways of addressing problems which requires sustained interactions

Box 3 Characteristics/three fundamental elements of a Community of Practice (Wenger et al., 2002, Wenger, 1998)

A key feature of a CoP is the value of interactions to support the flow of knowledge among members. The approach recognises the dynamic aspects of knowledge creation and sharing, yet places an emphasis on the mobilisation of tacit knowledge such as mindlines described previously (Roberts, 2006, Gabbay and le May, 2004). A potential problem with this relates to the acquisition of knowledge; if tacit knowledge takes precedence

over formal explicit knowledge, a CoP may not encompass and address the multifaceted nature of knowledge (Denscombe, 2008).

A CoP provides a means to analyse and facilitate knowledge creation and transfer across boundaries, or invisible barriers, between different practices, professionals and organisations (Kislov, 2013, Leask et al., 2008, Roberts, 2006). Boundaries of a CoP may be unclear and flexible, and the approach is a way of connecting people from different organisations. The ability to develop a community that can transfer learning and knowledge between group members, around a domain, to other contexts illustrates how a CoP provides a KM strategy that crosses and negotiates organisational, professional and geographical boundaries (Chandler and Fry, 2009). A potential limitation, however, is the focus on individuals and groups at the expense of addressing issues relating to the innovation or broader context (Koussa, 2017). The development of CoP with a strong collective identity can help to overcome barriers and facilitate KM across boundaries. For example, the mobilisation of research-based knowledge from an academic institution to the intended audience and users of that knowledge, located within a healthcare institution.

Theory in practice

Whilst CoPs are commonly used in business organisations as a way to manage knowledge, they have also been used to evaluate inter-group knowledge sharing (Ferlie et al., 2005), multi-professional service improvement projects (Kislov et al., 2012) and to facilitate KM in healthcare settings (Ranmuthugala et al., 2011). The transferability of CoP to healthcare organisations has been seen in enhancing professional and educational

networking in nursing (Andrew et al., 2008), improving standards in general practice (Jiwa et al., 2009) and supporting sustainable service improvement (Chandler and Fry, 2009). In addition, CoP is advocated in an NHS Knowledge Management Toolkit as a way of learning from shared experiences to create and share organisational knowledge (Kislov, 2012, Leask et al., 2008). A CoP has also been used to sustain change and drive forward innovation whereby members (researchers, HCPs, patients and the public) are encouraged to become involved with the implementation of an innovation (Rowley et al., 2012). This is suggested to be influential in gaining rich and explicit understandings of implementation and KM, enabling barriers to be addressed.

Despite evidence of the use of the approach for collaborative learning and promoting engagement in healthcare, challenges pertaining to supporting CoPs to create and share knowledge exist (Leask et al., 2008). Identified difficulties include issues concerning power and trust within the community. For example, power issues can impact on the knowledge created and shared within a CoP and may be influenced by members of varying seniority, expertise, or authority within an organisation. Hence, the knowledge created reflects dominant personalities and not the whole CoP. In addition, members may be reluctant to share information if there is a lack of trust or mutual understanding within the CoP (Roberts, 2006).

CoPs can, however, apply knowledge and learning to improve organisational efficiencies and patient outcomes. A CoP may challenge existing practice and develop new knowledge and effective practices (Leask et al., 2008) however it needs to be recognised that the outputs from a CoP may not align with organisational goals (Lathlean and Le May 2002, Kimble and Hildreth).

Learning from shared experiences is valuable for time-pressured clinicians who want to share best practice and understand what works, why and how. Working within a network of similar individuals, can create value and highlight waste by identifying solutions and sharing tried and tested implementation models. Whilst the potential benefits of the approach are recognised, time constraints for busy HCPs, organisational hierarchies and difficulty establishing, engaging and sustaining a CoP in general practice are recognised challenges (Chandler and Fry, 2009, Jiwa et al., 2009, Kerno Jr, 2008).

Summary and relevance to the thesis

The theory of CoP represents the contextual, social view of KM and how organisations learn, which is compatible with the aims of this thesis. It is appropriate in analysing the process of knowledge sharing between functioning organisational groups within general practice and across organisational and professional boundaries, such as academia (research team) and primary care (professional practice groups or GP teams) settings involved in the implementation of research evidence as presented in this thesis (Kislov, 2012). The CoP approach is a relevant theory for this thesis because it acknowledges the importance of tacit knowledge, however, this thesis is also concerned with the mobilisation of formal, explicit knowledge (guidelines and innovation). Although CoP provides insight into the 'what', 'who', and 'why' for implementation, there is a gap in the detail relating to the 'how'. The CoP approach is however actively used in the IAU where the candidate is based and is also adopted as part of the JIGSAW-e implementation project (<https://www.eithealth.eu/jigsaw-e>).

2.6.3 Absorptive Capacity

Overview

Whilst Absorptive Capacity (ACAP) was originally derived in business and organisational science, the concept is being increasingly used in healthcare and clinical science (Currie et al., 2018, Harvey et al., 2015, Harvey et al., 2010, Walshe et al., 2009). ACAP has modified certain features of existing theory thus allowing researchers to prioritise key aspects deemed critical in the 'how' and 'why' of implementation (Nilsen, 2015). ACAP addresses organisational context by focussing on how knowledge is used to improve performance within healthcare organisations (Currie et al., 2018, Harvey et al., 2010).

ACAP is the ability of an organisation to recognise, value, assimilate and apply new knowledge (Zahra and George, 2002, Cohen and Levinthal, 1990). One proposition of the theory is the notion that prior knowledge facilitates the learning of new related knowledge. Collectively, the four domains of ACAP (Figure 5) describe the capabilities and process of organisations identifying, absorbing, and using knowledge in clinical practice.

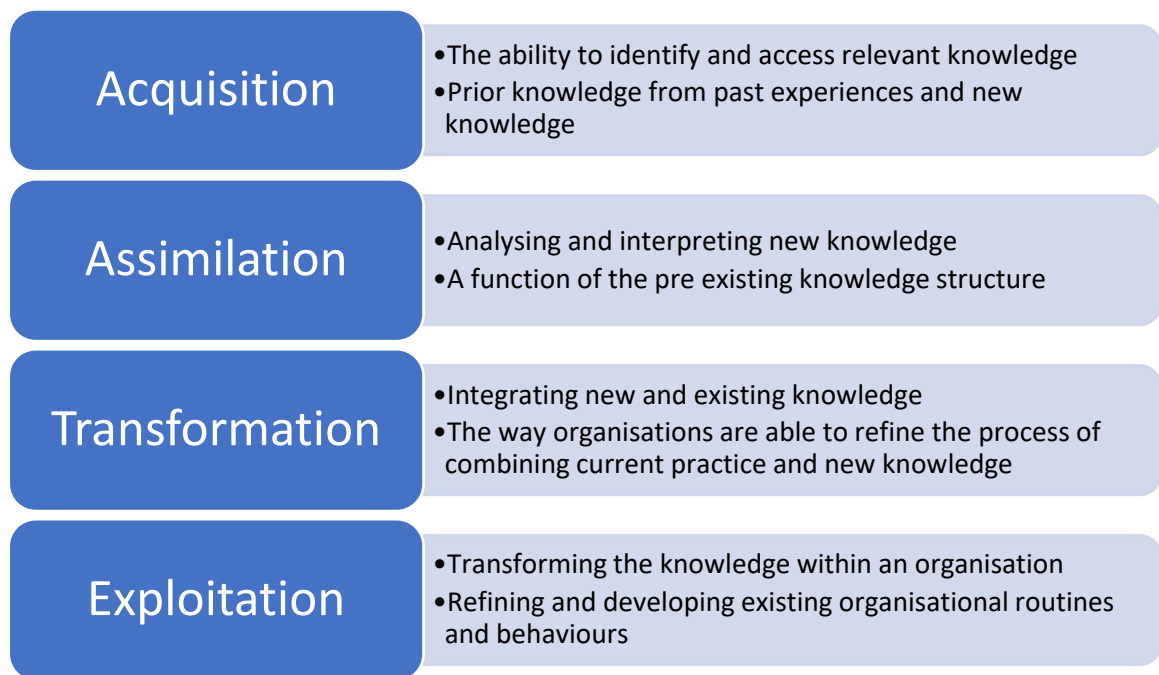


Figure 5 The four domains of Absorptive Capacity (adapted from Zahra and George, 2002)

ACAP suggests that contextual factors both internal and external to an organisation can mediate the way in which the organisation processes knowledge to improve learning and performance (Harvey et al., 2015). Work by Van Den Bosch and Volberda (1999) states that ACAP not only depends on prior knowledge but also on organisational determinants that are important antecedents to realising ACAP and influence organisational change and development. These are called combinative capabilities and are presented in Box 4.

Systems capabilities are formal knowledge exchange mechanisms that are often used to integrate explicit knowledge. e.g. policies, targets and incentives

Socialisation capabilities are the cultural mechanisms that promote a shared ideology within an organisation and relate to the social norms, relations and culture associated with knowledge use. e.g. Power status and hierarchy

Co-ordination capabilities are suggested to be required to enhance transformation and exploitation of knowledge within an organisation. These are lateral forms of communication or structures that encourage flexible approaches to ACAP. e.g. Training and education

Box 4 Organisational capabilities (Van Den Bosch and Volberda 1999)

Currie et al. (2018) outline how different combinations of combinative capabilities can impact on ACAP. Systems capabilities, such as codified, formal knowledge in the form of guideline recommendations, can limit the type of knowledge acquired and used within an organisation. Socialisation capabilities represent the professional and organisational culture, professional-managerial relations and collective interpretation within an organisation. Typically, the interaction of both (systems and socialisation) capabilities can limit KM across groups and ACAP within an organisation. Co-ordination capabilities on the other hand, which may include information from patient and public involvement and engagement (PPIE) representatives, for example, have the potential to overcome these barriers and mediate the effects of systems and socialisation capabilities, by providing more flexible approaches to KM that enhance ACAP. It is therefore important to understand how combinative capabilities combine and positively affect ACAP to better understand how evidence is used effectively in practice.

Theory in practice

ACAP can be used to better understand the organisational capacity for learning using external knowledge by looking at the capacity of a system to use evidence in practice. ACAP is, therefore, an appropriate organisational theory that can be used to solve health services problems by exploring how evidence has an impact within an organisation such as a general practice and how healthcare organisations translate different types of knowledge.

Whilst the limited application of ACAP to research healthcare settings is recognised (Currie et al., 2018), studies have demonstrated its use in evaluating commissioning organisations in reducing elderly care hospital admissions (Currie et al., 2018), examining how contextual factors mediate performance problems (Harvey et al., 2015), and understanding knowledge use in care homes (Berta et al., 2010). Findings suggest that healthcare organisations are effective in acquiring knowledge but seem less effective in using the knowledge to inform decision-making (assimilation and transformation) (Currie et al., 2018). Therefore, a challenge for NHS organisations is moving beyond the point of acquiring new evidence, which on its own is insufficient in changing clinical practice, to actioning it (Harvey et al., 2015).

Whilst ACAP does place some emphasis on the context in which knowledge is being utilised, Harvey et al. (2015) reported how the influence of leaders was a central finding in their study, yet this was not a focus of ACAP. The approach places an emphasis on internal and external contextual factors that influence organisational performance, as well as structures and processes. However,

there is less of a focus on specifying the actors that are involved in the process and their role in influencing implementation.

Summary and relevance to the thesis

ACAP focusses on how an organisation identifies and uses knowledge and is less concerned with individual change but more so on the organisational factors which optimise successful implementation. It can be applied to various organisations, including groups of GPs, practice organisations or entire Clinical Commissioning Groups (CCGs) to understand causes of variation. Whilst there are significantly fewer studies using ACAP in healthcare settings (and none in primary care), compared to NPT for example, it is relevant to the thesis as it provides a suitable framework for exploring crucial issues relating to how different types of knowledge are assimilated and transformed within organisations. Within primary care, ACAP could be utilised to provide understanding about the capacity of general practice organisations to mobilise knowledge and the contextual intricacies that affect the effective use of research-based evidence. However, using ACAP alone negates the factors relating to the key actors involved with implementation, including patients and their individual beliefs and behaviours.

2.6.4 The Integrated Promoting Action on Research Implementation in Health Services Framework

Overview

The original Promoting Action on Research in Health Services (PARIHS) framework, a determinant framework, was developed in 2008 in an attempt to characterise the complexity of the change process when mobilising research evidence into clinical practice (Kitson et al., 2008, Rycroft-Malone, 2004). The propositions of the PARIHS framework are that successful implementation in health care is premised on three simultaneous and dynamic determinants: the characteristics (quality and type) of the evidence; characteristics of the context; and how evidence is introduced or facilitated into practice. These are shown in Box 5.

$$\mathbf{SI = f(E, C, F)}$$

SI=successful implementation, E=evidence, C=context,
F=facilitation, f=function of

Box 5 Components of the PARIHS Framework (Kitson et al., 1998)

Reported strengths of the PARIHS framework are theoretical rigor and conceptual clarity due to significant empirical testing (Davies et al., 2015). A further advantage of the framework is that it highlights important considerations for implementation such as credibility of research and effective facilitation of the process. Despite widespread use, the PARIHS framework has been subject to criticism for failing to consider practical suggestions for translating key factors into action which would be beneficial for stakeholders (Davies et al., 2015). These include failing to address key dimensions such

as the intended targets for implementation and the roles that individuals play in implementation processes. Several further limitations identified include the lack of prospective implementation studies contributing to the evidence underpinning the PARIHS framework, a lack of clear definition for successful implementation, the need for clarity between the elements of the framework, a focus on the facilitation role rather than process (Helfrich et al., 2010) and a limited focus on the wider system and policy level context to implementation (Tabak et al., 2012).

Given the limitations, additional theoretical, empirical and experiential influences on the framework have been explored (Harvey and Kitson, 2016). The integrated-PARIHS (i-PARIHS) framework (Box 6) was developed from empirical research and analysis of theoretical evidence to establish key theoretical constructs for use when undertaking the implementation of complex interventions. Development of the i-PARIHS framework identified the underpinning theoretical antecedents of the framework by drawing upon relevant theories to ensure robust theoretical foundations.

<p style="text-align: center;">SI = Facⁿ (I+R+C)</p> <p>SI=successful implementation - Achievement of agreed implementation or project goals; The uptake or embedding of the innovation in practice; Individuals, teams and stakeholders are engaged, motivated and 'own' the innovation; Variation related to context is minimised across implementation settings.</p> <p>Facⁿ =facilitation</p> <p>I=innovation</p> <p>R=recipients</p> <p>C=context</p>
--

Box 6 Components of i-PARIHS (Harvey and Kitson 2016)

The i-PARIHS framework denotes the iterative, negotiated and relational nature of implementation and proposes an integrated approach to understanding the theoretical complexity within implementation science whereby successful implementation is specified as the achievement of implementation or project goals and results from the facilitation of an innovation with the recipients in their (local, organisational and health system) context (Harvey and Kitson, 2016). The constructs of the i-PARIHS framework are presented in Figure 6.

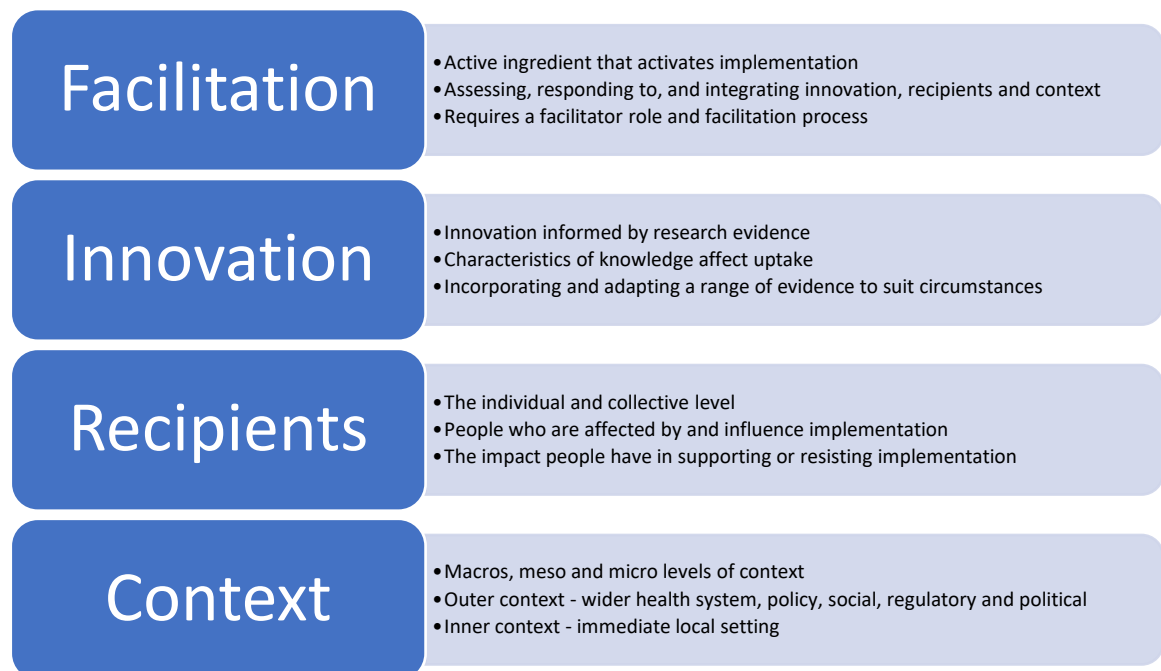


Figure 6 The constructs of the Integrated Promoting Action in Research Implementation in Health Services framework

A clear relationship between aspects of the constructs is evident within the i-PARIHS framework. The i-PARIHS framework encompasses factors relating to the individual and teams involved in implementation as well as wider organisational issues (inner context) and policy and regulatory factors (outer context). The evidence construct from the PARIHS framework has been amended to the innovation construct in i-PARIHS which suggests that

evidence such as that derived from a trial or systematic review is rarely lifted and used in clinical practice but is often interpreted and combined with local need and context. Furthermore, it describes the focus or content of the implementation effort more broadly to encompass innovation theory considerations and how individuals react to characteristics of new knowledge in addition to its evidence base.

The recipient is a new domain added to i-PARIHS which encompasses the individual and team that are affected by the innovation. This acknowledges how key implementation stakeholders assist or resist change throughout the process. The i-PARIHS framework also provides an additional focus on the role and process of facilitation as a key component in the success of implementation which is not explicitly covered by the other approaches.

The facilitation construct acknowledges the skills of the facilitator that enable individuals and the environment to be receptive to change and to be responsive to the ever-changing context of implementation. The role of the facilitator is about assessing, aligning and integrating the other constructs and relates to the importance of shared experiential learning to achieve change both within individuals and organisations (Kitson and Harvey, 2016). The i-PARIHS framework proposes that facilitators work with stakeholders to help them use the best available evidence in practice. For example, in understanding the nature of knowledge and evidence supporting the innovation and the novelty between current practice and the new knowledge to be implemented (Kitson and Harvey, 2016). The facilitator addresses issues regarding the engagement of participants or recipients but also needs to recognise and adapt to the dynamic, context-specific issues that may arise

such as local incentives or policy issues that may impact the process. The emphasis of the facilitation process is on enabling others to act, by building relationships, enhancing learning and demonstrating benefit.

Theory in practice

The original PARIHS framework has been used prospectively to evaluate, and more widely applied retrospectively, to provide insight into factors contributing to variation of implementation in different settings (Hill et al., 2017). The most common use of PARIHS is as an organising or conceptual framework across a range of study designs (Nilsen, 2015, Rycroft-Malone et al., 2013, Stetler et al., 2011, Helfrich et al., 2010, Kitson et al., 2008). Reported strengths of the approach include the flexibility of its use and the recognition of key interacting elements that capture the implementation experience (Helfrich et al., 2010). Limitations include a lack of detail about how the variables are measured and limited prospective use to design implementation strategies, although these were reported several years ago. PARIHS provides an explicit method to guide the analysis of evidence, context and facilitation which are reportedly important components of successful implementation in quality improvement studies (Ward et al., 2017). A need for greater conceptual clarity of the PARIHS framework has also been identified (Helfrich et al., 2010), however, the development of the i-PARIHS framework addresses these critiques.

Despite its relatively recent conception, the i-PARIHS framework has been used in practice to test and guide implementation as part of a trial in a hospital setting (Mudge et al., 2017); evaluate barriers and facilitators to implementation and sustainability (Bauer et al., 2018); improve

implementation of pharmacological treatments in the USA (Hagedorn et al., 2018); and, evaluate knowledge and innovation transfer roles within Academic Health Science Networks (AHSNs) in England and Wales (Bullock et al., 2016). To date, no studies have utilised the approach in primary care or musculoskeletal settings.

Summary and relevance to the thesis

In considering how the constructs of the original PARIHS framework have been operationalised, and the progressive development of these to the i-PARIHS framework, several strengths to the approach are noted. The i-PARIHS explanatory framework adopts a multi-dimensional perspective of implementation (Harvey and Kitson, 2016) and incorporates embedded beliefs about reflective and responsive learning. Whilst empirical, prospective use of i-PARIHS is limited, it has been derived from extensive evaluation and refinement of the widely used PARIHS framework which has been assessed for face validity and content validity (Harvey and Kitson, 2016). i-PARIHS is informed by a wide range of theories and addresses important implications for 'how' the process of implementation is approached (Harvey and Kitson, 2016). This reflects the multi-dimensional perspective of implementation and KM adopted by the i-PARIHS framework and this thesis respectively. The framework reinforces the non-linear, complex, dynamic nature of implementation and emphasises the importance of experiential learning at the level of individuals, teams, and organisations. The approach pays particular attention to patient preferences and experiences, which were initially addressed in the 'evidence' construct of the PARIHS framework, and now the 'recipient' construct of the i-PARIHS framework, to help understand

what constitutes evidence from the perspectives of the end users of an innovation. The i-PARIHS framework explicitly includes and describes the 'context' of implementation and 'facilitation' of the process, to acknowledge the complexity of implementation and the roles that key individuals play in the implementation process.

2.7 Discussion

This chapter has identified how complex integration of multiple types of knowledge relevant to local settings is required to reduce the evidence to practice gap and optimise implementation in general practice. The inherent challenges of KM and identifying the key ingredients that optimise successful implementation have been recognised, however, it is imperative that knowledge is framed around local populations, contexts, and real issues. By better understanding the differing assumptions held by stakeholders as to what counts as evidence and the capacity of organisations to utilise research knowledge, research impact can be maximised. The use of multiple forms of knowledge in implementation can shape thinking, attitudes, and actions of key stakeholders but evidence needs to be contextualised with the recognition that the process is multi-faceted and complicated. This supports the view that knowledge is dynamic and social and not value-free. KM facilitates the social processes to circulate knowledge and create connections and dialogue across boundaries, to facilitate knowledge application in practice (Swan et al., 2017). An underpinning theoretical approach is required to explore the factors influencing KM in this thesis.

In summary, each of the four theoretical approaches presented in this chapter has value in understanding and explaining the factors which influence implementation. This chapter has explored how these theoretical approaches differ in terms of their assumptions, aims, and other characteristics, which have implications for their use in this thesis (Nilsen, 2015). In addition, commonalities and gaps amongst the approaches have been identified. These require careful consideration when seeking to draw conclusions and provide

explanations regarding the factors which optimise implementation in this thesis.

Criticisms of theories, models, and frameworks of implementation are that they lack detail regarding the actions and resources that facilitate the process and that they imply a rational step-wise approach to implementation which is far from realistic. (Nilsen, 2015). Proponents of the approaches presented in this chapter suggest that these do not depict a sequential approach but present a logical reasoned approach to implementation processes.

Although the context is recognised as critically important in implementation, how context is interpreted and captured during the transition from research to implementation activity remains uncertain (Nilsen, 2015). In addition, it remains unclear as to which domains are priority areas for implementing health research for musculoskeletal primary care. This is complicated and attention needs to be paid to the hows and whys of implementation in order to identify explanatory factors which optimise the process.

Each approach has unique advantages relating to either the use in healthcare research, the supporting empirical evidence, or the emphasis of the constructs. Yet despite the uniqueness of each theory, some overlap was noted amongst all approaches in several areas. Firstly, the CoP approach resonates with elements of cognitive participation and collective action from NPT in bringing together a group of key stakeholders to consider new knowledge and act upon it collectively to facilitate implementation. Secondly, NPT and CoP both focus on how knowledge is held, transferred and created within and across professional boundaries. Finally, the key features of the i-PARIHS framework overlap with both ACAP and NPT. For example,

understanding the nature of knowledge and evidence supporting the innovation, and the novelty between current practice and the new knowledge to be implemented, resembles assimilation from ACAP and coherence from NPT.

Further observation and reflection from this chapter relates to the varying use of terminology amongst the literature and theories for *intervention* and *innovation*. Intervention refers to the action or process of intervening or taking action to improve a situation, whereas innovation reflects the action or process of innovating (Oxford, 2007). Innovation is often viewed as the application of better solutions that meet new requirements and is suggested to be crucial to change, transformation and the continuing success of any organisation (Bullock et al., 2016). Furthermore, innovation has also been conceptualised as an idea, service or product that is new to the NHS that improves the quality of healthcare wherever it is applied (DoH, 2011). In this thesis, therefore, the term intervention will be used to depict a research intervention tested within a trial, and innovation will portray a new practice which is applied. The explicit inclusion of application within the definition of innovation is useful for the focus of this thesis.

Choosing one approach may not necessarily tell the whole story and fully explain the mechanisms that influenced the processes explored within this thesis. Kennedy et al. (2014) suggest that combining theoretical approaches may help to interpret the bigger picture and complexities of implementation. Individual elements of different approaches may enhance the nuanced understanding of issues raised within this thesis. For example, the i-PARIHS framework recognises that context and facilitation are integral to successful

implementation in clinical practice and reflects the multifaceted and dynamic nature of KM in practice. Whilst this approach appears to be comprehensive, ACAP may be useful for exploring organisational factors. The strengths and overlap of all the approaches may help to understand the results of this thesis at different levels. It might, therefore, be appropriate to draw upon or combine multiple theoretical approaches to offer a complete understanding and explanation to the process of mobilising research evidence into practice (Nilsen, 2015).

2.8 Conclusion

This chapter presented the concept of knowledge along with a detailed account of how knowledge is used and shared, an explanation of related terms and some of the strategies for and challenges associated with KM. The definition of KM for this thesis has been described. One of the challenges with KM in primary care is the ability to replicate and repeat KM efforts due to the inherent contextual differences in each practice setting. A theoretical lens is required to help understand and explain the factors that influence KM in the context of musculoskeletal primary care. This chapter presented four theoretical approaches to understanding and explaining the factors that influenced implementation. The chapter discussed the origins of each theory, the meaning of the constructs within each approach and how they relate, evidence to support or refute each theory and how each approach has been used in practice and the relevance for this thesis.

Following in depth review of several approaches, the i-PARIHS framework seemed to be the most appropriate approach for this thesis. It was, however, important to maintain an open mind as further enquiry and consideration of the issues discussed were required. The following chapter explores the empirical evidence that helps to guide implementation in primary care.

Chapter 3: What works in getting evidence into practice in primary care: a review of current evidence and stakeholder views

3.1 Introduction

'If the research conducted in the first place isn't right then it won't be implemented because you are trying to fit a saddle on a cow. Things will only take hold if patients say, 'we need this'' (Anonymous 2016)

The previous chapter presented the concept of KM and an overview of four theoretical approaches for understanding how KM and implementation should work in practice. Each theoretical approach has unique advantages and offer a different perspective for potential use in this thesis. For example, NPT offers the opportunity to understand the process of embedding an intervention in practice but may not consider or reflect the importance of the patient role and the nature of context in implementation. CoP, on the other hand, provides a contextual approach, however it may not adequately address the 'how'/active process of mobilising knowledge necessary for this thesis. A strength of ACAP is that it is concerned with organisational factors that optimise implementation, but a potential drawback of the approach is that it negates the factors relating to the key actors involved in implementation. Finally, the i-PARIHS framework explicitly addresses context and the process of mobilising knowledge for implementation and acknowledges the complexity of KM. However, there are limited examples of its use in musculoskeletal primary care.

As a starting point for this thesis, it was important to understand the evidence of the factors that have been shown to successfully influence implementation and reduce the evidence to practice gap in primary care. It was also necessary to place this thesis within the context of other, current research

and identify any gaps or remaining uncertainties in the empirical evidence which could inform the later stages of this thesis.

As part of an NIHR School for Primary Care Research (SPCR) funded project, Lau et al. (2014) conducted two substantive systematic reviews of reviews to (i) assess the effectiveness of strategies in facilitating implementation of complex interventions in primary care (Lau et al., 2015) and (ii) explore the causes of implementation of research evidence or complex interventions in primary care (Lau et al., 2016). The latter systematic review produced a conceptual framework describing the key elements that influence the implementation of change in primary care and a list of practical recommendations for planning implementation. This synthesis of a substantial body of heterogeneous literature covers a range of interventions, populations, and outcomes, and provides a starting platform relevant to this thesis.

This chapter presents an overview of the work conducted by Lau and colleagues. This is followed by a discussion of the pertinent findings from each of the reviews relevant to this thesis, and the gaps in the current evidence. The chapter goes on to report the conduct and findings of a stakeholder advisory group which was conducted to address objective 2 of this thesis and gather stakeholder views on 'what works' in getting evidence into primary care practice. The aims of the multi-stakeholder engagement exercise were to:

- i. Seek views on the conceptual framework and recommendations developed by Lau et al. (2016), including strengths and limitations, to inform the design and methods of this thesis

- ii. Seek opinions and identify perceptions from key stakeholders of KM in primary care, thereby contextualising the conceptual framework and recommendations in terms of 'real-life' clinical practice and experiences

3.2 Overview of Lau systematic reviews of reviews

The first published systematic review of reviews related to the effectiveness of strategies in facilitating implementation of complex interventions in primary care (Lau et al., 2015). Whilst the title of the second published systematic review in 2016 specifies the 'causes' of the evidence to practice gap, it is important to note that this is a much broader review about the factors that influence implementation, including barriers and facilitators.

The review question, number and type of included studies, outcomes of interest, analysis and synthesis methods, main findings, and, recommendations and conclusions for both systematic reviews are summarised in Table 1, followed by a brief narrative description of both systematic reviews in sections 3.3 and 3.4 respectively. Findings relevant to OA are also highlighted. As the systematic review relating to barriers and facilitators is particularly relevant to this thesis, this is discussed in greater depth.

Table 1 Overview of work by Lau et al examining the evidence to practice gap in primary care

Review question	What is the effectiveness of different strategies in facilitating the implementation of complex interventions in primary care? (Lau et al., 2015)	What barriers and facilitators impede or enable the implementation of research evidence and complex interventions in primary care? (Lau et al., 2016)
Number of included papers	n=91	n=70
Eligible reviews	Reviews of single or multi-faceted implementation strategies to improve the implementation of complex interventions that focus on changing professional behaviour or clinical practice	Reviews of the barriers and facilitators of the evidence to practice gap for research findings or complex interventions in practice
Outcomes of interest	Measuring health professional practice or process outcomes Compliance with desired practice. Outcomes include the degree of implementation measures (adherence to desired practice), measures of processes of care (referral rates), professional performance (prescribing, adherence to guidelines)	Barriers and facilitators of implementation of interventions targeted at health professional behaviour change
Data analysis and synthesis	Synthesis table to capture the overall effect size, differential effects of implementation strategies on process or professional	Interpretative meta-synthesis conducted using a coding framework

<p>Data analysis and synthesis</p>	<p>outcomes and the active components or features that make implementation successful</p> <p>Used PRISMA checklist to critically appraise the quality of reporting</p> <p>Summarised and described using a narrative approach</p>	<p>21 primary and 40 secondary themes summarised in a narrative synthesis</p> <p>No formal quality appraisal conducted as the authors were describing and synthesising a body of qualitative literature and not determining an effect size. However, the degree to which the papers conformed to the PRISMA checklist was described</p>
<p>Main findings</p>	<p>64 studies reported data on strategies targeted at the professional level (audit and feedback, educational meetings, educational outreach and reminders, and local opinion leaders)</p> <p>10 reviews reported data on organisational implementation strategies (revising professional roles, practice facilitation, changing organisational culture)</p> <p>11 reviews reported data on strategies targeted at context level (financial strategies)</p>	<p>Barriers and facilitators, mainly qualitative data</p> <p>64 papers reported barriers only, 49 papers reported facilitators only, 46 papers reported both barriers and facilitators to closing the evidence to practice gap (for example policy, incentives, skill mix, resource)</p> <p>Reviews encompass a range of topic domains including Guideline implementation, quality of care and disease management, integration of new roles, technology-based implementation, public health, and preventative medicine and prescribing</p>
<p>Recommendations and conclusions</p>	<p>It remains unclear which strategies are more likely to be effective than others and under what conditions</p>	<p>The implementation process is influenced by external, organisational, professional, and intervention factors. These are presented as a conceptual framework and recommendations</p>

<p>Recommendations and conclusions</p>	<p>The use of one single strategy focussing on one implementation problem is advised</p> <p>No evidence that multiple approaches led to a bigger effect</p> <p>Future research should focus on the effectiveness of strategies targeted at the wider context and organisational levels and examining the cost-effectiveness.</p>	<p>Findings categorised as four core components acting upon and influencing the evidence to practice gap in primary care</p> <p>Future studies should consider describing the context and articulate the relationship between the factors identified in the review</p> <p>To maximise implementation, stakeholders should consider the dynamic nature and range of contextual factors</p>
---	--	---

3.3 Effective strategies for facilitating the implementation of complex interventions in primary care

3.3.1 Overview

A total of 91 reviews were included in this systematic review of reviews (Lau et al., 2015). The primary studies included in the reviews used mostly quantitative methods, including RCTs, quasi-experimental, controlled before-after studies, interrupted time series, and observational studies. Only two of the included reviews reported the inclusion of primary studies which adopted qualitative methods. Only one included review was reported to synthesise data using a theoretical framework.

A range of implementation strategies along with the key features of strategies which were likely to be associated with successful implementation were identified. The characteristics of complex interventions that were reported to enhance implementation included evidence of benefit, ease of use and adaptability to local circumstances (Lau et al., 2015). Optimal strategies for facilitating implementation included specifically tailored printed educational materials, facilitated educational strategies, audit and feedback, practice facilitation and financial strategies such as incentives. In contrast to previously published work (Prior et al., 2008), the systematic review of reviews by Lau et al. (2015) demonstrated, for the first time, that multifaceted strategies were not necessarily more effective than single strategies and showed that the collective use of several strategies did not provide additional benefit.

Most of the reviews included in this systematic review (n=64, 70%) focussed on strategies that addressed individual professional level barriers such as

audit and feedback, educational meetings, educational outreach, and reminders. However, findings suggest that most of these professional level strategies alone were associated with small to modest improvement in professional practice and process outcomes (2-9%) with considerable variability in the observed effects. For example, local opinion leaders were found to have a small beneficial effect however, a large confidence interval (9% IQR= -15 to +38%) was reported and so this needs interpreting with caution. Lau et al. (2015) report that educational outreach visits were associated with the largest median change relative to no strategy (23% IQR=12-39%). This was followed by educational meetings and workshops (10% IQR=8-32%). The least successful features of implementation strategies included those which incorporated didactic teaching and infrequent feedback.

3.3.2 Findings specific to OA

Of the 91 included reviews, the review by Lineker and Husted (2010) was specific to OA and comprised seven primary studies. The findings showed that interprofessional peer-facilitated workshops and educational outreach were successful in addressing a range of outcomes such as reducing orthopaedic referral, prescribing and increasing referral to rehabilitation services.

3.3.3 Summary

The conclusions drawn from this work have shown that the use of multiple implementation strategies is not necessarily more effective than single strategies and also illustrate uncertainty regarding the most effective implementation strategies and the conditions that optimise effectiveness.

Despite strategies aimed at the professional level showing small to modest improvement, the evidence base on implementation strategies remains inconclusive.

3.4 Barriers and facilitators to the implementation of research evidence or complex interventions in primary care

3.4.1 Overview

A total of 70 reviews were included in this systematic review of reviews. Due to the focus of this work on HCP behaviour change, the authors excluded reviews that reported patient behaviours. The primary studies included in the reviews used a range of methods to explore the barriers and facilitators to implementation. These included qualitative methods such as qualitative case studies and interviews, and quantitative methods such as RCTs and observational studies. Many of the reviews included primary studies which used both qualitative and quantitative methods including surveys, interviews and focus groups. Even though qualitative methods were adopted in many of the primary studies, Lau et al. (2016) call for future research to take a more explanatory approach to develop understanding relating to the hows and whys of implementation.

Theoretical frameworks were described in 25 of the included reviews (36%). These included the Diffusion of Innovations theory, NPT², the Consolidated Framework for Implementation Research, the Technology Acceptance Model and the PARIHS framework³. Lau et al. (2016) report how these theories were mostly used to explain findings in the discussion or as part of the introduction

² See Chapter 2 section 2.6.1 for an overview of NPT

³ See Chapter 2 section 2.6.4 for an overview of the PARIHS framework

or background. Few of the reviews used theory as a way to aid data analysis, therefore, a more theoretically driven approach was recommended by Lau et al. (2016) to better explore and understand the context.

Lau et al. (2016) identify a range of factors (reported as barriers and facilitators) that influence implementation in primary care and classified these into four levels; external context, organisation, professional and intervention. The authors develop these factors into a conceptual framework and the components of the framework are presented in Figure 7.

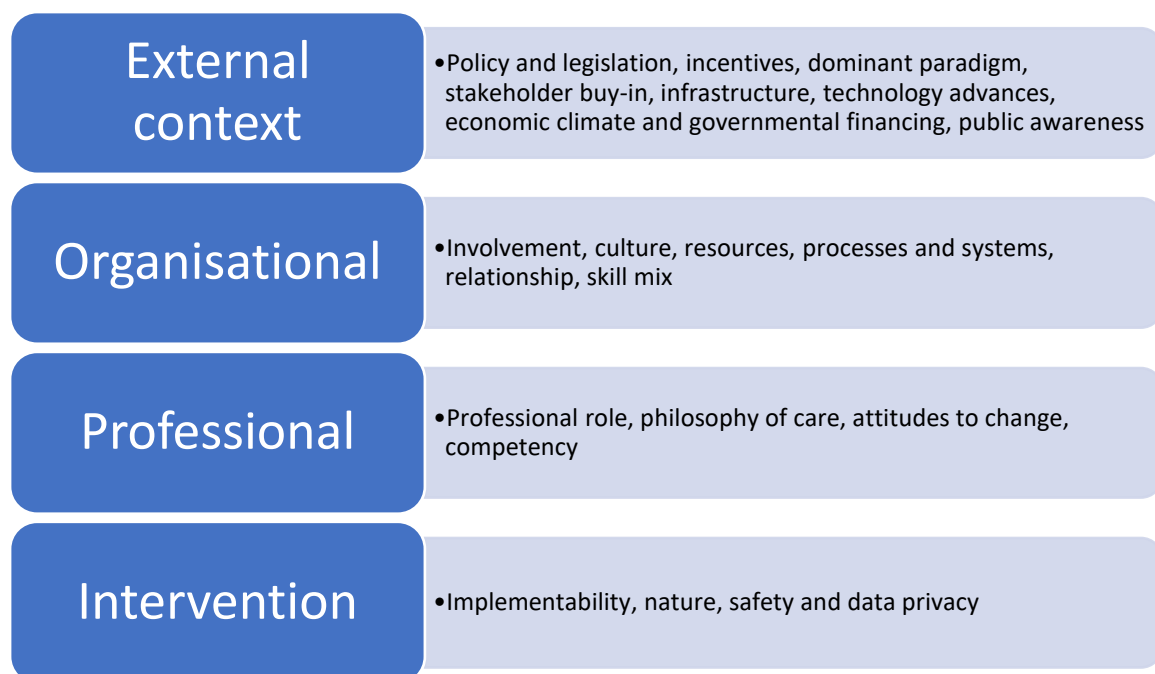


Figure 7 The key elements of the conceptual framework developed by Lau et al (2016) describing factors that enable or impede implementation of complex interventions in primary care

3.4.2 Findings specific to OA

Of the 70 included reviews, only one related specifically to OA and focussed on the influence of educational programmes on the implementation of clinical practice guidelines for both rheumatoid arthritis (RA) and OA (Lineker and

Husted, 2010). The key factors identified from this review as influencing implementation related to 'professional role' and comprised attitudes and beliefs (including attitudes to change) and competencies.

3.4.3 Summary

Overall, it seems that there is a paucity of contextual information, regarding barriers and facilitators, and, choice of implementation strategy within the literature. The evidence indicates that a lack of research on organisational-level and context-level factors exists. Lau et al. (2016) identified a lack of information regarding the context in which the barriers and facilitators occurred and the dynamic relationships among the factors. In addition, there was limited information relating to the cost-effectiveness of implementation strategies. The other significant gap in the literature that has been identified in examining the systematic review of reviews, is the lack of studies focussing specifically on implementation issues in the field of OA.

3.5 Recommendations and limitations of both systematic reviews of reviews and relevance to the thesis

The work by Lau and colleagues is the first broad and inclusive comprehensive overview of literature relating to implementation in primary care. The systematic reviews of reviews bring an overall coherence to an incredibly vast body of literature whilst producing outputs which are clinically relevant. The work is not restricted to any topic or health condition yet has started to identify some interventions that have worked in primary care across different conditions.

Lau et al. (2016) make several recommendations for future implementation research and practice. Firstly, stakeholders are advised to re-consider

implementation strategies and the identified barriers to implementation as these are continually changing dynamic entities. Secondly, implementation strategies with robust designs, based on theoretical frameworks and tailored to the relevant barriers are needed. Finally, future research should focus on how and why an implementation strategy (or combination of strategies) works differently in different contexts and organisational and contextual level strategies to address this. One way of approaching this would be using qualitative methods to yield greater insights into contextual factors.

The conceptual framework and subsequent recommendations are comprehensive yet useable (Lau et al., 2016). Given that the conceptual framework has been established from a range of perspectives, it is likely to be of benefit to a variety of stakeholders. The framework denotes the level of complexity involved in implementation whilst summarising a range of fundamental features for consideration by researchers, practitioners, managers, and policymakers which require empirical testing.

Lau et al. (2014) offers a new perspective on the evidence to practice gap in primary care which is a pivotal starting point for this thesis. Despite this, several issues require further consideration for this thesis. Exploring the 'causes' of uptake (or not) of an intervention implies that implementation is a linear process. However, whilst the original research question of one of the systematic reviews of reviews focussed on establishing the causes of the evidence to practice gap, the findings and conclusions relate to barriers and facilitators. In addition, the literature suggests that the components of complex interventions and knowledge use tend not to act in a linear fashion but are reliant on people and are highly dependent on the context in which

they take place (Wong, 2009). The findings indicate a multi-factorial process with various, dynamic influences. Therefore, a realist evaluation, with the aim of identifying what works, for whom and in what circumstances, may have been an appropriate approach to address the research questions posed by Lau et al. (2014).

A limitation of both systematic reviews of reviews conducted by Lau et al (2015; 2016) is that they comprise an evaluation of the second layer of interpretations from the primary studies initially conducted and is therefore open to potential misinterpretations. Furthermore, relevant evidence would not have been included if it had not been summarised in a review thus there is a potential risk that relevant evidence has been omitted. The systematic review of reviews also excluded studies that only examined patient behaviour and so potentially valuable insights relating to patient-related barriers and facilitators may have been missed. Even though such studies were excluded because patient behaviour change was not the focus of the work, it is important to acknowledge the potential for patients to have a wider influence on implementation. Given that patients and the public are central to healthcare decision making and to the design and conduct of research, it is important to understand if and how patients and the public influence implementation. It may, therefore, be beneficial to build on the findings reported by Lau et al. (2016) by producing evidence which is in line with current UK healthcare policy drivers to include patients and the public in research, healthcare processes and decision making (Involve, 2012).

Uncertainty exists regarding the use of KM theory and whether theoretical approaches to KM were adopted in the original research studies, therefore

providing a possible explanation for the limited reporting of theory identified by the authors. Despite this substantial piece of work, little is known about what can optimise implementation for OA in primary care as very few studies included in the review focussed on OA or other musculoskeletal conditions. Arguably, implementation for OA in primary care may be exposed to a very different set of circumstances than diabetes care for example. It is therefore important to better understand 'what works' for implementation of interventions for OA in primary care and also 'what works' from a qualitative perspective to yield greater insights.

To seek views on the conceptual framework and recommendations developed by Lau et al. (2016) and to contextualise them in terms of 'real-world' clinical practice and experiences, it was considered important to seek opinions and identify perceptions from key stakeholders in primary care. The following section presents the conduct of and findings from a multi-stakeholder advisory group.

3.6 Multi-stakeholder opinions of evidence-based recommendations for implementation in primary care

This section describes the rationale for selecting a stakeholder advisory group, this is followed by an account of the subsequent steps taken to establish and conduct a stakeholder advisory group, and the findings, along with how these informed the next stage of the thesis.

3.6.1 Stakeholder involvement in healthcare research

Stakeholders have been defined by Deverka et al. (2012) as '*Individuals and organisations that have a direct interest in the process and outcomes of a project, research or policy endeavor*'. The growing practice of stakeholder engagement is integral to both the research cycle and implementation process and encourages key individuals to share valuable perspectives to help shape research (Morton et al., 2017). Stakeholder engagement has been defined by Deverka et al. (2012. p5) as '*an iterative process of actively soliciting the knowledge, experience, judgment, and values of individuals selected to represent a broad range of direct interests in a particular issue, for the dual purposes of creating a shared understanding and making relevant, transparent and effective decisions*', and by Concannon et al. (2012) as '*a bi-directional relationship between stakeholder and researcher that results in informed decision making about the prioritisation, conduct and use of research*'.

A range of evidence informs decision making, therefore, the collaboration between researchers and stakeholders can steer research in ways which are perceived to be relevant to key stakeholders and can help develop healthcare research which has the maximal benefit to patients (Shea and Lewko, 1995,

Hoffman et al., 2010). Stakeholder engagement is also suggested to improve research adoption (Concannon et al., 2014).

A central consideration for this thesis was to engage and collaborate with multi-stakeholders to ensure that the research was focused on the most pertinent and relevant KM issues. Despite a relatively small body of literature explicitly referring to stakeholder engagement (Boaz et al., 2018), there are suggestions of several ways in which stakeholders can be involved in the research. The following section explores three approaches appropriate to the aims of this work and describes the justification for the chosen approach.

3.6.2 The rationale for the choice of approach

Due to the complexity and multi-factorial nature of the topic, a qualitative face-to-face approach for engaging stakeholders was necessary to allow flexibility of discussion and enable emergent, new ideas which may not have already been considered by the candidate to be taken forward (Bowling, 2009). This component of work sought to actively engage a variety of stakeholders to provide a mechanism for experts to discuss, interpret, refine, and challenge the preliminary interpretations of the literature whilst also providing insights regarding KM in primary care which could guide, inform and focus the empirical components of the thesis. To achieve this objective, the following approaches were considered; Community of Practice (CoP), Focus group, and Stakeholder Advisory Group.

A detailed account of a CoP approach is provided in Chapter 2 section 2.6.2, but briefly, to summarise, it involves a group of people establishing an ongoing learning community who interact regularly to deepen knowledge and expertise around a particular topic (Wenger et al., 2002). Whilst relevant

information and discussion would likely be gleaned from a CoP, given the focus of this exercise, to host a 'one-off' discussion meeting, by definition, a CoP was not appropriate.

Focus groups are a way of collecting qualitative data, whereby a small number of people are brought together to discuss a particular topic or issue (Green and Thorogood, 2009). The main feature of focus groups is the access to data generated as a result of group interaction (Morgan, 1988). Advantages of focus group methods include the extensive body of literature describing focus group conduct which would help to ensure that the process is methodologically robust and the access to fairly large amounts of data in relatively short periods of time (Murphy et al., 1998). However, a focus group approach would incorporate stakeholders as part of the research, hence being conducted *on* them rather than a consultation *with* them. The purpose of this exercise was to inform the methods and design of the thesis rather than to capture new data per se. It was, therefore, important to balance the demands of selecting a methodologically sound approach with the practicalities, aims, and objectives of this work, and hence, obtaining ethical approval to conduct a focus group discussion in the given time frame, was deemed impractical in this context.

Considering the constraints of funding, along with the components of stakeholder engagement described by Concannon et al. (2012) relating to informed decision making and the conduct, prioritisation and use of research, a one-off stakeholder advisory group meeting was considered most appropriate. Stakeholder advisory groups have been suggested to improve the relevance of research and enhance the utilisation of study findings (Shea

and Lewko, 1995, Concannon et al., 2014). The approach allows for discussion of key issues and making relevant decisions for the next phase of the thesis, and had the added benefit of logistical convenience, although limited guidelines exist to facilitate stakeholder engagement in an advisory group (Morton et al., 2017, Deverka et al., 2012, Ryan et al., 2001).

3.7 Stakeholder advisory group conduct

The stakeholder advisory group comprised a one-off meeting to exchange and discuss information pertinent to this thesis. The candidate and the study team also held a debrief meeting following the group discussion. The seven-item questionnaire for reporting on stakeholder engagement in research developed by Concannon et al. (2012) and design principles for stakeholder engagement developed by Boaz et al. (2018) were used to inform the conduct and reporting of the stakeholder advisory group (Concannon et al., 2014). In addition, the key stages identified by Lawrence et al. (2000) for engaging stakeholders were considered. These include: understanding the issue to be resolved, identification of the stakeholders to be involved, convening a group, and, defining and discussing the topic options.

The issue to be resolved

The advisory group was conducted to (i) seek opinions and identify perceptions from key stakeholders of KM in primary care, (ii) contextualise the evidence-based recommendations and framework developed by Lau et al. (2016) in terms of real-life clinical practice and experiences, and, (iii) seek views on the evidence-based recommendations. The aim of the discussion was also to inform the study methods and signpost the next stage of inquiry of this thesis.

Identification of stakeholders

The stakeholders were people drawn from communities with expertise related to the key areas of the thesis (musculoskeletal, implementation, primary care, KM, service provision, service utilisation). It was important that the group was multidisciplinary and comprised of individuals who were considered 'boundary spanners' thus having experience and/or knowledge of working at the interface between research and practice (Parry et al., 2009). The following groups of people were invited to attend the stakeholder advisory group:

- Researchers with specific expertise in implementation
- Patient and public involvement and engagement (PPIE) representatives from the Research User Group (RUG) at the Arthritis Research UK Primary Care Centre at Keele University
- Commissioners
- Clinical leads from primary care
- Clinicians with expertise in research and/or implementation
- Knowledge mobilisation experts (research fellows/professors)

The potential members were approached by an email which explained the reasons for holding the meeting, together with a copy of the supporting information for discussion. Ethical approval was not sought as this exercise comprised stakeholder engagement and not research.

Convening the group

Of the fifteen individuals approached to take part in the advisory group, eleven agreed to participate and eight attended on the day. Seven professionals and one lay representative took part in the advisory group (six

females and two males). The group of stakeholders represented a broad view of KM in primary care from a range of perspectives. Two of the candidate's three supervisors also participated in the discussion.

Attendees of the stakeholder advisory group included a Senior Musculoskeletal Researcher with experience of implementing a national physiotherapy project, a National Institute for Health Research (NIHR) Knowledge Mobilisation Research Fellow (KMRF) and Professor in Nursing, an implementation Research Fellow and Lecturer of Nursing, the lead of PPIE for the West Midlands Collaborations for Leadership in Applied Health Research and Care (CLAHRC) who had a specialist interest in translation from academia to healthcare, a Professor of Knowledge Mobilisation with an interest in OA, a GP who was also a commissioner, a Consultant Physiotherapist with a specialist interest in evidence-based practice (EBP) and who was an NIHR KMF and, finally, a Professor of Musculoskeletal Therapies who was also an NIHR KMRF.

The stakeholder advisory group took place on 16th May 2017 at the Arthritis Research UK Primary Care Centre at Keele University. The candidate and one supervisor facilitated the meeting. The meeting lasted two hours. Travel expenses were paid if requested.

Defining and discussing the topic options

An agenda and discussion guide (Appendix 2) were developed to facilitate the discussion during the meeting around key topic areas. The discussion guide was informed by existing literature and the requirements of the current stage of the thesis. The key topics for discussion included: the domains identified in the framework by Lau et al. (2016), barriers and facilitators to

closing the evidence to practice gap, how to utilise the best evidence in clinical practice, and local issues regarding KM and implementation in primary care. An overview of the MOSAICS study, JIGSAW implementation project and the Impact Accelerator Unit (IAU) were presented to contextualise the KM thesis. An outline of the current recommendations developed by Lau et al. (2016) and the main findings generated was then presented by the candidate before the group considered and commented on these.

The discussion was digitally recorded (with verbal consent from attendees) and two members of the study team made notes of key comments and discussion points from the meeting which served as a reminder to the candidate. Immediately following the stakeholder advisory group, the study team met to debrief, identify issues that may influence the Ph.D. methods and discuss the significant issues that arose. Summaries of the notes made can be found in Appendix 3.

Identification of priority areas to inform thesis methods

A descriptive analysis of the notes taken during the session was analysed based on the principles of thematic analysis (Braun and Clarke, 2006). An abductive approach was used whereby findings were mapped to the Lau framework headings (where appropriate) as well as newly emergent areas being noted (Ormston et al., 2014, Yu, 1994). The debrief meeting identified important issues to take forward in the thesis, and following this, the candidate familiarised herself with the recording of the meeting and the notes made. Broad themes were identified by the candidate and discussed with supervisor (ZP). The candidate re-reviewed the discussion summary and notes before identifying the key issues for consideration in the thesis. A mind

map was created to represent the key themes discussed visually as a range of central ideas and associated ideas (Appendix 4). This was used in conjunction with the One Sheet of Paper (OSOP) technique for thematic analysis, devised by Ziebland and McPherson (2006), to conceptualise the discussion topics and inform the results.

3.8 Key discussion points to inform the thesis

The initial part of the advisory group was spent discussing KM issues more broadly, including what is KM and how it differs from implementation. General comments on the evidence and recommendations presented were then discussed; all the time, attendees reflected on personal experiences and previous projects. Finally, this was followed by discussion and reflection on the framework and the perceived impact of this on KM in primary care.

The stakeholder feedback identified four inter-related themes for consideration in this thesis: external context, flexibility, the evolution of KM in healthcare, and PPIE. The two themes that were more closely aligned with the framework developed by Lau et al. (2016) (external context and flexibility) are presented first, followed by the two themes that represent the perceived omissions in the framework by the stakeholders (the evolution of KM and PPIE).

External context

The group attendees discussed how they related to this element of the framework and spent the most time discussing the context and how flexibility was important across the framework. The concept of change was debated amongst the group and the need for academia to embrace and accept

continual external change as a positive factor in the transformation of modern healthcare. Participants deliberated the challenges for researchers in mobilising research-based knowledge in the current climate which included the 'phenomenal rate of change' and 'firefighting as part of normal practice'. Attendees expressed their concerns regarding the difference in pace between academia and clinical practice. One stakeholder stressed the importance of conducting 'forward-thinking' research which is 'innovative' to avoid the potential pitfall of being unable to adapt to an ever-evolving healthcare landscape.

Other contextual factors were suggested by the group to influence and often challenge KM, including finance and resources, and culture. The group reported that funding is paramount to KM success. The challenges associated with securing funding to increase provision were discussed and it was agreed that funding and resources 'go hand in hand' and are finite within CCGs.

Culture and the commonly held values and beliefs of stakeholders within healthcare and wider society were suggested to influence KM. Stakeholders discussed how 'one negative view' can impede efforts to implement best practice. The group acknowledged a lack of public awareness and media support for evidence-based treatments and self-management of LTCs and felt that an advocate or champion for KM between research and practice was required to provide the public with appropriate information.

Flexibility

The flexibility theme represents the contextual complexities of KM and illustrates the need for all aspects of KM and implementation to be adaptable and flexible to respond to contextual factors. Although flexibility was not explicitly included on the framework developed by Lau et al. (2016), the group identified how flexibility was important across all of the four domains of the framework. The discussion illustrated how a combination of factors from the different domains of the framework may result in different organisations getting the same successful outcome but via a different journey.

The group highlighted the importance of recognising the range of contextual factors within an organisation and the need for flexible KM approaches. A shift away from traditional views of 'one size fits all' and ensuring that KM is contextual and inclusive of a wide variety of stakeholders were felt to be important. Attendees acknowledged the challenges of replicating an innovation in several different contexts. One attendee reflected on their previous experience and warned against expecting an intervention to work the same way in one setting as it does in another due to the multi-faceted influences at play within each organisation. A flexible intervention was suggested to be more likely to fit with current practice, processes, and systems within the local context, as well as the dominant paradigms associated with the external context, and patient needs.

The need for KM to be quick, innovative and engaging was discussed. Flexibility and adaptability were acknowledged as important characteristics of the implementer or implementation team, to tailor the 'sales pitch' of

implementation to the relevant context and person(s) and to meet the needs of staff, patients, and commissioners.

To ensure that knowledge either 'fits' with, or shapes best practice, the group indicated that different types of data may be more relevant than research findings and more powerful in influencing stakeholders to shift thinking and adopt a new behaviour. One attendee reflected on a previous experience whereby local audit data, relevant to the local context was more valuable to commissioners in informing decision-making than data from a large research study. The advisory group voiced concern regarding a perceived limitation with current research not being relevant to the local context. Presenting commissioners with findings that are based on their local context was believed to be critical in increasing confidence and stakeholder buy-in, thus optimising implementation. Another suggestion was that academia needed to think beyond traditional research methods and to take the time to use creative methodologies that are engaging to stakeholders to improve KM.

The evolution of KM in healthcare

The current landscape of KM

Attendees described the changing landscape of healthcare research and stressed the importance of academia acknowledging and responding to the evolution of KM accordingly. The group discussed how cultural changes and increasing demands placed on the NHS have resulted in a shift of EBM. The 'traditional' model of EBM, where the process of reading, appraising, and applying evidence to clinical practice was largely led by clinicians, was reported to no longer be accommodated in modern-day general practice. The stressful, busy nature of primary care practice was suggested by stakeholders

to negatively affect KM and implementation. In addition, attendees discussed the impact of guidelines which they described as being 'divorced' from reality and not enough to change practice.

Feedback from the group indicated that due to the workload of clinicians they 'don't want to and can't wade through lots of data', they want examples of a similar practice, which is a similar size, and someone to say, 'this is what we do and how it works'. The language used implied that bravery was part of implementing even good quality evidence with attendees using words such as 'courage' in relation to instigating and mandating implementation. Whilst the majority of comments regarding the implementation of best practice were positive, one attendee described implementation as a role that 'nobody wants to take on'. The idea of no one being willing to lead implementation activity was influenced by a lack of clear boundaries, roles, and responsibilities regarding KM.

Implementation – whose role is it anyway?

One of the perceived omissions of the framework developed by Lau et al. (2016) related to the role and remit of KM. The stakeholder advisory group reflected on the benefits of having a range of people as an implementation team, who collectively have the skills, credentials, and backgrounds to adapt to a range of audiences and settings when mobilising knowledge. This prompted discussion relating to the emerging role and remit of implementers or knowledge mobilisers. Feedback from the stakeholders indicated that researchers may be better placed to mobilise knowledge rather than 'the old way' of leaving it to clinicians. The idea of researchers expanding their roles to become implementers was met with cynicism by some of the group.

Uncertainty and lack of clarity regarding 'who are the implementers?' was identified by the group. Throughout the meeting, the ownership of KM was discussed, and several questions were raised including 'Who drives it forward? What are you aiming for? What is your role and when do you let go?' and, also 'Where does the promoting implementation boundary sit?' Stakeholders expressed concern and discussed the need to handle the issue of the role of implementers sensitively as there was the potential for implementation activity to present a huge workload at the detriment of other core components of an individual's role. One attendee voiced concern that implementation could become 'confusing' because of the complexity of the engagement process, therefore a mature and honest relationship between key stakeholders was required to ensure clarity in roles and remit.

Necessary attributes to mobilise knowledge

The idea that an implementer or implementation team were sales representatives was discussed in the meeting. Delivering a 'strong message' by having a robust 'sales pitch' from academia was a suggested strategy to provide clear, appropriate and, responsive messages to professionals and the public. A necessary part of the implementers' role was reportedly the identification of key messages for different audiences and packaging them in a way that could easily be assimilated by stakeholders. Implementers were described by the group as being required to 'wear lots of hats' and, to be 'multilingual' to engage a range of stakeholders. The attendees identified how these factors were important yet not represented in the framework by Lau et al. (2016).

Participants described 'credibility' as the implementer having detailed knowledge and understanding of the context in which they are attempting to mobilise knowledge within. The necessity for the implementer to 'speak the same language' as other stakeholders within the setting and either have existing relationships, or the ability to develop rapport quickly and easily. A key feature of the discussion was the notion of 'you are more likely to listen to someone who is like yourself'.

The ability to influence others was reported as a necessary skill of the implementer and an eminent factor in ensuring that KM activity is aligned to local needs in order to influence change. 'There will be a variety of different hooks, and part of your skill as an influencer is to get the right hook to meet the CCG needs'. A major role of the implementer in delivering and promoting a strong, responsive message when mobilising knowledge and engaging key stakeholders was advocated by the group. Implementers who are embedded in the process were suggested to optimise engagement with KM and ultimately drive change. These included boundary spanning individuals working at the interface of academia and clinical practice. Attendees identified concerns regarding 'implementation fatigue' as a potential barrier to mobilising knowledge.

Patient and public involvement

A considerable amount of group discussion related to the role and importance of PPIE throughout the entirety of the KM process. Patients and the public were reported to be integral to mobilising knowledge for successful implementation and participants agreed that the patient was a constant component throughout the process. As well as patient preferences, the group

acknowledged the role of carers, friends, family, and the public as being of equal importance and often overlooked in KM. Attendees discussed the 'oversight' of patients, carers, family, and friends in the framework developed by Lau et al. (2016) and described PPIE as a 'surprising omission'.

The notion of co-creation and collaborative working between patients, academics, and commissioners was discussed. This included consideration of the attributes of research knowledge that make it more conducive to uptake, from the design of research studies to implementing innovations in clinical practice. Attendees discussed a recent shift in approach which involves patients setting research agendas in areas such as LTCs and considered how vital patient preferences are in new models of care and priority setting partnerships. It was felt by the group that a focal point of influencing implementation and enhancing KM was ensuring that research questions are appropriate, patient-centered and clinically relevant. Research and KM that did not meet patient needs were described as 'trying to fit a saddle on a cow', which illustrates the importance of the 'fit' and relevance of research, KM and context. Developing an intervention that is aimed at, and acceptable to patients was agreed by the group to be a fundamental part of the process.

The attendees indicated that patients were the driving force behind KM and that patient involvement and contribution were valuable components of the decision-making process. One attendee commented on how implementation efforts can be driven according to research agendas, but they may be ineffective because 'health is personal to the patient'. Implementation that focussed purely on GPs or other HCPs was considered wasted by the advisory group and maximal impact was suggested to be difficult to achieve if

researchers do not work closely with patients and the public. A central focus of the discussion was that patients need to be able to make an informed choice regarding their healthcare and one of the main challenges identified was 'how do we get the right information to patients and who does it?'

3.9 Discussion

3.9.1 Summary of main findings

The two systematic reviews of reviews conducted by Lau et al, (2015; 2016) have synthesised a substantial body of research relating to the evidence to practice gap in primary care. The findings of this work classify the barriers and facilitators to implementation into four levels: external context, organisational, professional and intervention. These factors were discussed in a stakeholder advisory group with a broad range of stakeholders. The breadth and depth of experiences and perspectives were particularly useful in illuminating issues relating to KM and the potential use of the framework developed by Lau et al. (2016), by those who are embedded in primary care practice.

Several important gaps have been identified that require further consideration in this thesis. A paucity of systematic review evidence specific to OA was found. However, as previously mentioned, any empirical studies that were not summarised in a review would have been excluded by Lau and colleagues, therefore, there is a need to better understand the empirical studies conducted in the field. The omission of patient-related factors in the systematic review of reviews may mean that relevant information has been overlooked. The stakeholder group thought that PPIE was central to KM by ensuring that research is relevant and that interventions are acceptable to end users. It appears that very few studies have explored the evidence to practice gap in primary care using qualitative methods and a lack of evidence describing organisational factors has been identified. The stakeholder group agreed with the recommendations by Lau et al. (2016) that related to understanding context and suggested that a focus on the context is required

in both the theoretical and empirical components of this thesis. Finally, the advisory group thought that the ownership and roles relating to KM, along with the skills of the implementer or implementation team are important and hence require careful consideration in this thesis.

3.9.2 Reflections and comparison with existing literature

Contextual factors

Understanding context has been advocated in both empirical and theoretical KM literature, however, detailed descriptions of context are reportedly lacking in empirical research studies (Lau et al., 2016, Harvey and Kitson, 2016, Davies et al., 2016). Given that Lau et al. (2016) concluded that very few studies have addressed contextual factors, it is important to address this gap in this thesis. Furthermore, a significant amount of KM studies have been conducted in secondary care (Currie et al., 2018, Davies et al., 2015, Harvey et al., 2015), hence it is also important to enhance understanding relating to the dynamic nature of KM in primary care and whether there are any novel components associated with it.

Knowledge and the role of the knowledge mobiliser

The group discussion reflects a body of literature that postulates how KM is not an individual process but a social, collective and situated process where clinicians combine clinical experience and research evidence to make decisions (see Chapter 2) (Nutley et al., 2008). The attendees indicated how assuming that evidence is automatically mobilised into clinical practice is outdated (Crilly et al., 2010) and that interconnectivity between research, practice, and patients is required. This is supported by Davies et al. (2016) who reports that EBM is no longer seen as existing between the two

communities (research producers and researcher users). The change in the mechanism may be associated with a shift in culture between those producing the research and those who are able to use it (Lomas, 2000). However, the group reported uncertainty about who connects the two worlds and how they do it.

On reflection, the role and ownership of KM appear to encompass more than the 'implementer'. Literature relating to the role of moving knowledge to where it can be best used describes several terms which relate to the 'knowledge mobiliser', including the 'messenger' and the 'adopter' (Horton et al., 2018, Grimshaw et al., 2012). The role of messenger, adopter or mobiliser is mainly conceptualised as an individual (including patients), but can also refer to a group, organisation, or healthcare system (Grimshaw et al., 2012).

The findings from the advisory group discussions suggest how knowledge mobilisers need to find quick, pragmatic ways to enable primary care clinicians to access research-based knowledge. This is corroborated in work by Galbraith et al. (2017) who acknowledge the constraints encountered in modern general practice such as time pressures and identify several barriers to GPs developing and maintaining EBP skills. They identify the desire of clinicians for pragmatic pre-appraised evidence which has also been found to be appropriate for GPs (McColl et al., 1998). Further evidence supporting the advisory group discussion suggests that tailoring the format and presentation of knowledge products makes the mobilisation of knowledge more accessible (Pentland et al., 2011). Grimshaw et al. (2012) state that the audience and

package of knowledge being transferred will dictate the most appropriate vehicle for delivery.

Whilst conceptual uncertainty relating to the ownership of KM exists, the characteristics and skill set of the knowledge mobiliser discussed in the stakeholder advisory group, appear to be consistent with the literature. From the main discussions in the stakeholder advisory group, it was agreed that knowledge mobilisers need to be credible, and responsive to the needs of several different stakeholders to maximise success. Similarities are noted with previous studies that suggest that relationships depend on the skill sets and personalities of those involved and that credibility is an important factor in optimising outcomes (Davies et al., 2016, Shonkoff, 2000, Hayward et al., 1997). Menear et al. (2012) identify how using appropriate communication channels for the target audience and removing barriers to accessing and using evidence-based research are key elements of KM. A recent study by Turner et al. (2017) also identified that the credibility of those presenting the evidence influences decision making in the adoption of innovations in healthcare.

Patient and public involvement

Whilst studies that only examined patient behaviour were not included in the systematic review of reviews, this was identified as a priority area by the stakeholder advisory group. The need to involve patients and the public in the healthcare agenda is recognised within the Five Year Forward View, to enable patients to have greater control of their own care (Ham and Murray, 2015). A central component of this is the need to develop outcomes that matter to those people using the services, which requires engagement with

patients and the public. Embedding PPIE within the NHS is seen in Priority Setting Partnerships (PSPs) which enable clinicians, patients, and carers to work together in identifying and prioritising questions regarding treatment uncertainties which can be answered by research (JLA, 2018). This helps to ensure that research questions are important to all stakeholder groups and that clinicians and patients shape the research agenda. This is key to ensuring that research is effective in addressing the needs of patients.

Whilst the involvement of patients and the public at the earlier stages of the research journey or service design is more commonplace (Involve, 2012, Cooksey, 2006), it appears that PPIE in KM and implementation is recognised as important but may be lagging in practice (Boaz et al., 2018). Work by Menear et al. (2012) states that implementation of evidence is facilitated by involving patients and tailoring KM for implementation to patient needs. The delay in developing and actioning PPIE may be attributed to the fact that the field of KM is recently evolving, but the same notion is identified within the context of implementation. Aligning KM for implementation to patient preferences is an under-researched area which needs exploring further to identify and understand the potential challenges and opportunities it presents.

3.9.3 Implications for this thesis

The findings reported in this chapter have highlighted the importance of exploring the organisational contextual factors that may help or hinder KM within general practice organisations. By exploring 'what works' in the context of implementation in primary care, this thesis may identify unique factors that are specific to general practice.

The stakeholder advisory group attendees discussed how different types of knowledge are given priority by different stakeholders dependent on their context. Therefore, in this thesis, it is necessary to explore the ways in which different types of knowledge were mobilised in the JIGSAW implementation project. Furthermore, the role and importance of patient involvement in KM and changing clinical practice within general practice warrants further investigation.

There is little evidence relating to who sets and subsequently drives the KM agenda, the priorities for mobilising knowledge into practice and policy, and the potential roles and responsibilities of KM actors. Evidence suggests that clarity is required regarding these issues (Ferlie et al., 2016). For this thesis, the term knowledge mobiliser will be used to reflect the person(s) who move knowledge to where it is most useful. On reflection, specific consideration and exploration into the role of the knowledge mobiliser in optimising the flow of knowledge between complex environments to enhance implementation are required. One way of addressing this is by including relevant questions in the interview topic guide to elicit perceptions and experiences of the role of the knowledge mobiliser.

The findings reported in this chapter have reinforced the applicability of the i-PARIHS framework (presented in Chapter 2 section 2.6.4) as a theoretical approach for this thesis due to the inclusion of facilitation and context domains which may help to better understand the nuances associated with the role of the knowledge mobiliser and the context in which they operate.

3.9.4 Strengths and limitations

This chapter has presented an overview of findings from a substantial review of primary care literature and a stakeholder advisory group. These have informed the design and methods of the thesis by identifying areas of focus and perceived gaps in current evidence and practice. Strengths of the stakeholder advisory group approach include the depth of knowledge provided by experts in the field who had a wealth of KM experience and the involvement of a PPIE representative to elicit patients' perceptions of KM. The stakeholder advisory group process supports the principles of group decision-making and ensuring that stakeholder opinions were captured early in the design of the thesis. The ability to consider the practical relevance of theoretical information and current literature alongside real-world accounts of KM in primary care has been beneficial in signposting the work. Taking the views of a range of stakeholders into account provided nuanced insights into KM in practice at an early stage of the work and promoted further researcher reflexivity. As a result, a training need was identified, and the candidate subsequently completed a 'researcher in residence' placement at a local general practice. The stakeholder advisory group approach also enabled the identification of key issues not previously considered and further critical reflection of the use on theory in this thesis.

Only eight individuals contributed to the stakeholder group, however, those who attended were considered experts in the field and contributed a breadth and depth of knowledge and expertise which have been incredibly valuable in signposting the thesis. A stakeholder group was chosen in preference to a focus group as this was more appropriate for the purpose of this task, to

provide expert opinions from a balanced membership and broad range of perspectives and to signpost and inform the subsequent phases of this thesis. As a result, ethical approval was not sought and the discussion was not transcribed for a more in-depth analysis. The discussion was arguably similar to that that may have occurred in a focus group and some authors have used the term stakeholder and focus group interchangeably (Turner et al., 2017).

3.10 Conclusion

This chapter has presented an overview of current evidence relating to implementation in primary care practice across all health conditions (Lau et al., 2016, Lau et al., 2015). The four components of a conceptual framework (external context, organisational, professional and intervention) describing the barriers and facilitators to implementation have been presented. Whilst professional level strategies were associated with small to modest effects, there was no evidence to suggest that combining implementation strategies provides additional value. It remains unclear as to what the most beneficial strategies are for optimising implementation in primary care and a need for future research to investigate both organisational and contextual factors affecting implementation activity has been highlighted. Despite the breadth and depth of the systematic review of reviews carried out by Lau et al (2016, 2015), a dearth of evidence relating to implementation for OA has been identified. It is therefore important to better understand 'what works' for implementation of interventions for OA in primary care from a qualitative perspective.

This chapter also reported on the selection and conduct of a stakeholder advisory group used to seek opinions and identify perceptions from key stakeholders of KM in primary care and the evidence-based recommendations. The findings have provided valuable insight into potential omissions from the current best evidence and enabled the identification of important concepts to signpost the next phase of this thesis. The need to better understand the context of KM, the ownership and role of KM, and, if and how patients and the public influence implementation, emerged as

important issues for consideration in this thesis which will be integrated both theoretically and empirically.

Given the need to better understand the primary empirical data relating to implementation for OA in primary care, and, if and how patients and the public influence implementation, a robust review of the literature in this field was required. The following chapter presents a systematic review and thematic synthesis to address objective 3 (page 16) of this thesis, to explore the factors that influence the uptake of evidence-based guidelines for OA in primary care.

Chapter 4: Factors influencing the implementation of evidence-based guidelines for osteoarthritis in primary care: a systematic review and thematic synthesis

4.1 Introduction

Chapter 1 presented an overview of several models of care that support the use of evidence-based guidelines for OA in practice. The previous chapter presented an overview of evidence for implementation across all conditions in primary care and from a stakeholder advisory group that was conducted to inform the thesis. Research exploring the process of implementing such models of care is required to provide insights into the practical, real-world issues encountered and to develop targeted implementation strategies (Allen et al., 2016). Given the need for rigorous implementation of evidence-based guidelines for OA (Allen et al., 2015) and a 'comprehensive assessment of the barriers and enablers to effective guideline implementation' (Brand and Cox, 2006), it was important to gain an accurate representation of what was already known about the topic, identify any remaining uncertainties and understand how primary research could address any gaps.

Previous evidence syntheses have described clinicians' views of the barriers and enablers of the management of OA (Egerton et al., 2016) and factors affecting implementation more broadly across a range of conditions in primary care (Lau et al., 2016). In addition, the perceived barriers to implementation of best practice guidelines for OA across hospital and community settings have been explored (Brand and Cox, 2006). However, to date, no study has synthesised the *experiences* of implementing evidence-based guidelines for OA in primary care. Therefore, to gain further exploratory findings in this rapidly emerging field, an assessment of the known factors affecting implementation and the experiences of this is

required. The most robust methodology to use to undertake this type of work is a systematic review.

This chapter draws upon qualitative research that focusses on descriptive studies examining factors that influenced the implementation of evidence-based guidelines for OA in primary care, which involves complex, social processes that are not easily measured (Dixon-Woods et al., 2005). The aim of this systematic review was, therefore, to identify, appraise and synthesise available empirical qualitative evidence that investigates the implementation of evidence-based guidelines for OA in primary care.

4.2 Methodological considerations for the systematic review

A systematic review of qualitative research can provide valuable evidence that informs policy and practice, and affects decision making in healthcare (Dixon-Woods and Fitzpatrick, 2001, Popay et al., 1998). Given that research findings are used by policymakers, HCPs, and patients, it is important to integrate and interpret information in a way that informs key stakeholders. Providing detailed descriptions of the subjective meaning and context enables the reader to make an informed decision on the appropriateness and relevance of the synthesis to their settings (Popay et al., 1998).

The choice of method depends largely on the aims and purpose of the review, and the types of conclusions needed. To select the most appropriate method for this review, the aim of the review, the utility of the synthesis product and the potential challenges of synthesising qualitative research were considered. These are discussed below, followed by an overview of some of the methods available for synthesising qualitative research.

To generate new knowledge and understanding regarding KM in line with thesis aims and objectives, an interpretative synthesis approach that develops new concepts and theories was appropriate (Pope et al., 2007). By moving beyond the original findings from primary studies and generating new conceptual understandings, this review aims to provide a fresh interpretation of KM for implementation, to inform knowledge and develop thinking and practice (Gough et al., 2012).

Given the lack of guidance for implementing research evidence for OA in primary care, it was important to produce an output from the review that was novel, and able to inform theory and practice as well as subsequent stages

of the thesis (Barnett-Page and Thomas, 2009, Thomas and Harden, 2008). A synthesis product that is systematically grounded in the studies it includes and has generated abstract and formal theories was required (Gough et al., 2012, Thomas and Harden, 2008).

A potential challenge of conducting a qualitative synthesis of implementation studies is deciding what constitutes data or findings and how to extract this information from the primary studies (Thomas and Harden, 2008, Popay et al., 2006). Qualitative studies often not only contain large amounts of data, but findings are also both detailed and complex. However, in contrast, details on implementation processes can often be sparse (Popay et al., 2006). Furthermore, identifying this information is potentially made more difficult by the differences in reporting styles amongst authors (and journals), the inclusion of author interpretations in study results and conclusions, and issues relating to publishing (such as limitations of word count or the need for additional files or tables of results). Thomas and Harden (2008) discuss a variety of ways in which this issue has been addressed, ranging from identifying and extracting either direct quotations or key concepts, to including all text labelled as 'findings' or 'results'. Whilst there is little consensus regarding how data or findings should be decided for qualitative synthesis, the issue requires careful consideration when selecting an appropriate method.

4.3 Methods for synthesising qualitative research

A synthesis method was required to address questions regarding the factors influencing implementation, without compromising the key principles of the systematic review (Barnett-Page and Thomas, 2009). Several methods for

synthesising qualitative research exist ranging from structured approaches to more iterative methods (Gough et al., 2017). A framework synthesis provides a highly structured approach to organising and analysing large amounts of qualitative data, similar to a framework analysis of qualitative data (Barnett-Page and Thomas, 2009). Meta-ethnography, on the other hand, is a flexible, translational approach that comprises three components; reciprocal translation, refutational synthesis and lines-of-argument synthesis (Barnett-Page and Thomas, 2009). Grounded theory offers an inductive, comparative approach whereby theoretical or conceptual insights emerge from the data as a result of iterative analysis (Barnett-Page and Thomas, 2009, Pope et al., 2007). The key elements of grounded theory include simultaneous data collection and analysis, the use of constant comparison within the analysis and theoretical sampling to reach theoretical saturation (Glaser and Strauss, 2009).

Thematic synthesis has a clear conceptual link with both grounded theory and meta-ethnography by combining elements of both approaches (Barnett-Page and Thomas, 2009). For example, the method identifies free codes and descriptive themes, and following iterative, interpretative analysis, the main themes and central concepts are translated from one study to another to generate analytical themes that provide a novel interpretation of the findings (Thomas and Harden, 2008). The translation of concepts from individual studies into one another (reciprocal translation) can enhance the explanatory nature of the synthesis. Gough et al. (2017) describe how this reflects elements of meta-ethnography by developing higher order interpretations, whilst the inductive approach to analysis, whereby themes are developed

using constant comparison, demonstrates similar features to grounded theory.

Thematic synthesis has been used in systematic reviews of qualitative literature that address questions about people's perspectives and experiences (Harden et al., 2006, Harden et al., 2004) and explore barriers and facilitators (Shepherd et al., 2006); it has also been advocated as an appropriate method for syntheses of implementation studies (Gough et al., 2017).

A key feature of the approach that is relevant to this study, is the integration of data that allows theory to emerge (Thomas and Harden, 2008). This facilitates the generation and building of new concepts and theory as to how people experience the phenomena under review and may identify key areas that warrant further exploration in the latter stages of the thesis. The method allows for the explicit, transparent synthesis of qualitative research whilst respecting the context and complexity of the included studies (Thomas and Harden, 2008). Regarded as a 'synthesis technique', thematic synthesis can be used in many types of reviews to produce new concepts and theory (Gough et al., 2017, Thomas and Harden, 2008).

Another benefit of adopting thematic synthesis for this review is that the approach can mitigate the potential challenges associated with selecting and extracting qualitative, implementation data by eliminating the data extraction stage and importing the whole results section from each paper into NVivo computer software to aid data organisation and analysis (Thomas and Harden, 2008).

4.4 Systematic review methods

To investigate the factors influencing the implementation of evidence-based guidelines for OA in primary care a thematic synthesis approach was adopted. The candidate led the review, working with two additional reviewers (qualitative supervisor and experienced academic rheumatologist, and a senior academic nurse). No *a priori* theoretical assumptions were made prior to the conduct of this work because firstly, thematic synthesis typically adopts an inductive approach whereby data extraction and analysis are data driven. Secondly, it was decided that this may be too restrictive as the work was exploratory and interpretative in nature, and sought to identify the scope of the literature in the field and to develop a richer picture of implementation from the perspectives of HCPs, patients, commissioners or managers (Thomas and Harden, 2008).

The review was registered with PROSPERO (reference CRD42017079289, October 2017), an international database of prospectively registered systematic reviews in health and social care and results presented in line with the adapted Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement for reporting systematic reviews of qualitative evidence (Moher et al., 2009).

4.4.1 Search strategy

A structured search strategy was developed and tested in an initial scoping exercise, using search terms chosen to identify research studies pertaining to the implementation of evidence-based guidelines for OA in primary care. The initial scoping search identified relevant research reporting either *perceived* or *actual* factors using a range of methods. Subsequently, the

search strategy was refined, with advice from the Research Information Scientist, a local librarian, and the systematic review team within the Research Institute for Primary Care and Health Sciences (IPCHS) who have expertise in healthcare and implementation literature searching, to capture as much of the relevant literature as possible (see Appendix 5 for a summary of the search terms used).

Seven electronic databases were searched: MEDLINE, EMBASE, CINAHL, HMIC, PsychINFO, Web of Science (social science citation index) and Assia. The specific search terms used were adjusted for each database used, to account for the differences in controlled vocabulary between databases. Reference lists of the included articles were checked for relevant papers not already included. All searches were undertaken in October 2017 and included papers published between 2000 and September 2017 to reflect the recent development of implementation science as a discipline. The search was updated in March 2019.

4.4.2 Study selection

Eligibility criteria for the studies were defined prior to undertaking the search (Higgins and Green, 2008) (Table 2). To be included, studies must have reported on factors that influenced implementation, with the primary focus of the paper being the use of qualitative methods for data collection and analysis (reporting of qualitative components as appendices or additional files were excluded). The search strategy was limited to English language only and full-text studies that were conducted in primary care settings, as this is where most OA care takes place. Finally, to be eligible for inclusion in this

review, the focus of the study had to be on implementing evidence-based guidelines for OA and not on treatment or management approaches.

Covidence, a Cochrane technology platform, online software product was used to manage and conduct the systematic review. Citations were imported to Covidence from EndNote reference manager software, through which, all duplicate articles were identified and removed. All remaining titles were then subject to an initial screening by the candidate. Articles failing to meet the inclusion criteria and/or meeting at least one exclusion criterion were excluded and the reasons for exclusion were recorded. Two reviewers (LS and ZP) assessed the abstracts of the remaining articles, exclusion and inclusion criteria were reapplied, and non-relevant papers were excluded. The final determination of inclusion for articles used full-text information. An overly inclusive approach until progression to the full-text screening stage was adopted in light of the challenges in identifying qualitative data in implementation studies (Popay et al., 2006). Each was subject to dual review and in the case of disagreement, a third opinion was sought from the remaining reviewer. Articles remaining at the end of this process were included in the quality assessment and thematic synthesis phases.

Table 2 Criteria for including studies in the systematic review

Inclusions	
Population	Primary care clinicians applying, or primary care patients receiving osteoarthritis guidelines, recommendations, or evidence-based practice
Experience	The context of implementation (from the patient or healthcare professional perspective) of established evidence-based intervention Studies published in the English language
Outcome of interest	Actual or experienced barriers, facilitators, influential factors
Setting	Primary care/general practice
Study design	Qualitative empirical studies
Exclusions	
Population	Patients with low back pain, arthritis of the spine
Experience	Management or treatment of osteoarthritis Development of an intervention Intervention/innovation not informed by evidence-based guidelines or recommendations Studies not published in the English language
Outcome of interest	Anticipated, perceived, predicted or expected barriers, facilitators, influential factors
Setting	Secondary care
Study design	Qualitative component included as an appendix or additional file, as such that qualitative methods and reporting are <i>NOT</i> the primary focus Quantitative reporting of findings Systematic reviews Abstracts or conference proceedings

4.4.3 Quality assessment

Challenges for appraising qualitative studies in systematic reviews are well recognised (Mays and Pope, 2000b) and include: the subjectivity of quality assessment; varied methodological approaches and assumptions underpinning qualitative research; and, the difficulty in appraising author interpretations (Dixon-Woods et al., 2004, Dixon-Woods and Fitzpatrick, 2001, Popay et al., 1998). In addition, there is a lack of consensus as to which of the many quality assessment tools to adopt (Walsh and Downe, 2006, Dixon-Woods et al., 2004).

The primary aim of quality assessment of the included studies was to identify any potential flaws that may undermine the quality of each study and to be able to judge the overall findings of the synthesis in light of the robustness of the included studies (Pope et al., 2007). Studies in this review were not excluded or weighted based on quality as this has the potential risk of losing insightful findings or concepts from studies that may be valuable to the synthesis, even if the methods are sub-optimal (Gough et al., 2017, Dixon-Woods et al., 2005). A quality appraisal tool was required that assessed quality issues relating to the reporting and the methods used for data collection and analysis in the included studies. Three approaches to the quality appraisal of qualitative findings were considered.

The Critical Appraisal Skills Program (CASP) tool for qualitative research (CASP, 2006) has been advocated for, and used in qualitative systematic reviews (Smith et al., 2014, Pope et al., 2007). The CASP tool uses a 10-question framework to examine the methodological rigour, credibility, and relevance of the results to enable the reader to assess if the findings are

useful in local settings. The tool is straightforward and enables the systematic assessment of qualitative research (Masood et al., 2011, Hannes et al., 2010). Whilst the CASP tool provides a useful overview for assessing the trustworthiness of study findings, it does not include criteria relating to the context in which the research was carried out which was important for this review.

Specifically developed quality appraisal criteria from other published thematic syntheses were reviewed to assess the appropriateness for this review (Harden et al., 2009, Thomas et al., 2007). The criteria used by Harden et al. (2009) were found to mitigate the concerns raised with CASP by including additional criteria relating to context that were appropriate for the aims of a thematic synthesis, although not all of the criteria were appropriate for this review. For example, the criteria relating to the extent to which the study findings reflected the perspectives and experiences of stakeholders appeared to be related more to study eligibility for the review than methodological quality.

The consolidated criteria for reporting qualitative research (COREQ) (Tong et al., 2007), a 32-point checklist recommended by the Equator network (Enhancing the QUALity and Transparency Of health Research), was also considered. The COREQ tool provided a rigorous, comprehensive framework for assessing the quality of qualitative studies, however, this tool does not provide information on any additional domains of quality or robustness that are not covered by the CASP tool. Furthermore, the CASP tool lends itself to a more discursive appraisal of issues related to trustworthiness, and both theoretical and practical considerations.

Therefore, for this review, an 11-point list of quality assessment criteria was used, derived and informed by the CASP checklist (CASP, 2006), with one additional question from Harden et al. (2009) to identify issues related to study context. The criteria used to assess the quality of the qualitative studies included in this review are shown in Table 3.

Table 3 Quality assessment criteria (adapted from Harden et al 2009 and CASP 2006)

1. Was there a clear statement of the aims and objectives of the research?
 2. Was there an adequate description of the context in which the research was conducted?
 3. Is a qualitative methodology appropriate to address the aims and objectives of the research?
 4. Was the research design clearly described?
 5. Was the recruitment strategy and sample clearly described?
 6. Were the data collection methods clearly described?
 7. Has researcher reflexivity been adequately considered?
 8. Have ethical issues been taken into consideration?
 9. Was the data analysis sufficiently rigorous?
 10. Is there a clear statement of findings?
 11. How valuable is the research?
-

Two researchers (the candidate and AF) independently assessed the methodological quality of the selected studies. Disagreements were discussed and resolved with a third reviewer (ZP) where necessary. The identified strengths and weaknesses of the included studies and the implications of these were compared and considered. Any areas of omission or uncertainty were highlighted and reflected upon.

4.4.4 Data analysis and synthesis

Thematic synthesis typically adopts an inductive approach; therefore, no theoretical framework was imposed on the data to allow all emergent ideas, themes, and concepts to be carefully considered in the interpretative explanation (Barnett-Page and Thomas, 2009). Data analysis and synthesis were conducted according to the three-stage approach advocated by Thomas

and Harden (2008). It is important to note that these stages are overlapping and iterative and not distinct, linear phases. This process is described below.

Stage 1. Coding text

For this review, 'study results' comprised all text labelled as results or findings in the primary studies. The results of each study were imported into NVivo 11 to organise data, aid qualitative analysis and maintain a record of interpretative and analytical decisions (Gough et al., 2017). An iterative, in-depth interrogation of each study included in the review was conducted. Inductive, line by line coding was undertaken whereby the candidate highlighted and associated sections of text to a theme to gain insight into the underpinning meaning and concepts. This was an inductive, emergent process to facilitate the identification of themes and translation of concepts from one study to another (Bornbaum et al., 2015). In identifying key concepts from one study, the same concepts were then recognised in some of the other studies, even if they were not expressed using the same words (Thomas and Harden, 2008). The second reviewer (qualitative supervisor ZP) independently coded the results of two studies for comparison. All initial codes were listed on one page to facilitate stage 2. All text and codes were reviewed with the study team (the candidate, ZP, AF, and KD) to examine the reviewers' interpretations and check for consistency. No additional levels of coding were needed following discussions.

Stage 2. Developing descriptive themes

The descriptive codes were next reviewed for similarities and differences (for example looking for a common language or meaning) and then organised

into similar, more descriptive themes (Gough et al., 2017). These were discussed with qualitative supervisor (ZP). A preliminary coding framework was developed by the candidate to organise the findings and begin to explore and articulate relationships amongst the data. Due to the descriptive nature of this stage, the descriptive themes remain close to the results of the primary studies.

An iterative process of refining emerging ideas and expanding on developing concepts took place. During this process, codes were renamed, merged, and removed to capture the meaning of each potential theme. Following iterative discussions, a draft narrative summary of the findings was written by the candidate, discussed and reviewed with ZP and a final version agreed. Descriptive themes emerged from this process which distilled the findings from the original studies into key features (Harden and Thomas, 2005). The content of these themes was then further analysed by re-reviewing the data, the coding framework, and the themes, paying attention to the context and meaning of the data to ensure this was accurately reflected.

Stage 3. Generating analytic themes

The final stage of data analysis involved going beyond the results of the original studies to address the aim of this review with analytic themes. Generating analytic themes is suggested to be the most important yet challenging part of the thematic synthesis process (Harden and Thomas, 2005) as it produces new conceptual explanations of the data but is dependent on the judgement of the reviewers (Gough et al., 2017).

Theoretical work was undertaken during the analysis process as the data were considered and discussed iteratively, and conceptually similar themes were associated with one another (Gough et al., 2012). Through meetings with the supervisory team, the implications of each descriptive theme were discussed, and in-between discussions, the candidate reflected on the findings and revisited the descriptive themes. By comparing and contrasting the descriptive themes, more analytic themes began to emerge. Revisiting the descriptive themes and considering the implications of each theme in the context of the review aims facilitated this process.

The candidate wrote a narrative summary which provided a detailed account of the analytic themes. The factors influencing the implementation of evidence-based guidelines for OA were considered in light of these analytic themes and the narrative was amended to reflect the iterations that were discussed. This cyclical process continued until the analytic themes were found to describe and/or explain the descriptive themes, they were discussed with the whole study team as a group. An agreement was gained on the final 'analytical' themes for inclusion in the synthesis. The results were mapped to the i-PARIHS framework.

4.5 Results

4.5.1 Included studies

The searches identified 1612 titles, leaving 1175 after de-duplication. The screening of titles reduced the number of papers from 1175 to 174. The review of abstracts resulted in the removal of a further 142 papers (58 were either conference proceedings or abstracts and therefore not full texts, 49 did not report on factors influencing implementation, 4 were not specific to OA and 31 did not use or report qualitative methods as the primary focus of the paper). Of the remaining 32 papers that underwent full-text review, 28 were ineligible (20 did not use or report qualitative methods as the primary focus of the paper, 7 did not report on factors influencing the implementation of guidelines, and 1 was not specific to OA). This deductive process left four papers that were eligible for inclusion in the review (Morden et al., 2015, Morden et al., 2014, Ong et al., 2014, Cuperus et al., 2013). Figure 8 sets out the review process in a flowchart⁴.

⁴ The systematic review search was updated in March 2019 and revealed 162 titles. Of the 162 titles, 19 abstracts and/or full texts were reviewed but no new papers were identified that met the eligibility criteria. The results of the updated search are not included in Figure 8

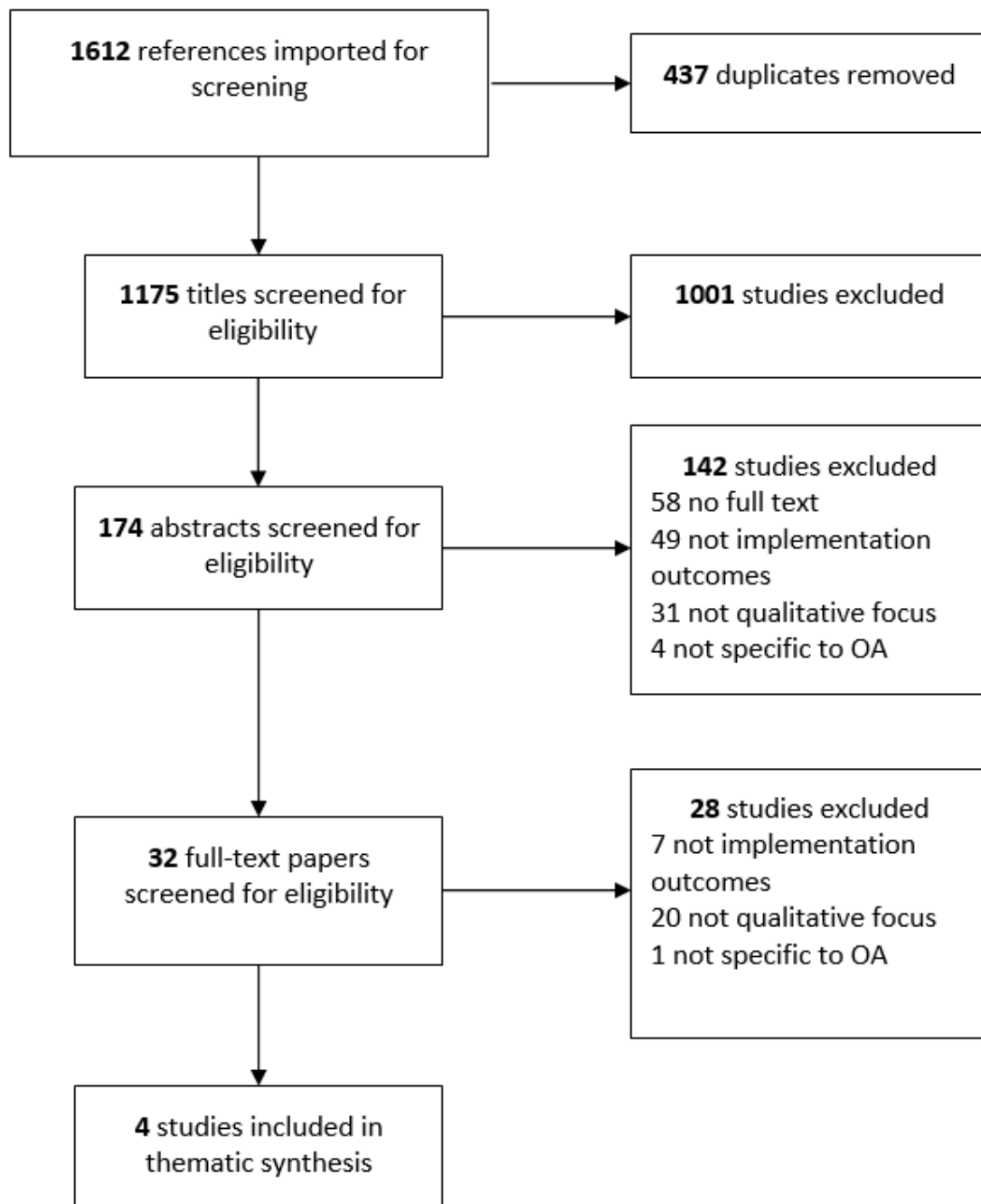


Figure 8 Flowchart documenting the study selection process for the review

4.5.2 Study characteristics

The included studies were all conducted as part of larger implementation projects. Of the four studies, three were conducted in England (Morden et

al., 2015, Morden et al., 2014, Ong et al., 2014) as part of the MOSAICS study. These studies were all conducted in the context of an implementation trial. One of the studies (Morden et al., 2014) focussed specifically on the implementation of an OA guidebook as part of the complex intervention, whilst the other two studies (Morden et al., 2015, Ong et al., 2014) explored the implementation of the complex intervention as a whole. The fourth study (Cuperus et al., 2013), from the Netherlands, explored the implementation of an OA self-management booklet as part of the BART study⁵. The context of the fourth study research was following a research trial and prior to large scale implementation.

To explore the experiences of implementation, semi-structured interviews, (Morden et al., 2015, Morden et al., 2014, Cuperus et al., 2013) or group interviews (Ong et al., 2014) were used. Observations of meetings between researchers and general practices also took place in two of the studies (Morden et al., 2015, Ong et al., 2014).

Participants in the included studies were patients (n=46), GPs (n=28) and practice nurses (n=13). Only two of the studies included patient participants and these were the studies that were exploring the implementation of a patient related resource (guidebook/written information) (Morden et al., 2014, Cuperus et al., 2013). Three of the included studies stated explicitly the theoretical underpinnings of their work which were NPT (Morden et al., 2015, Ong et al., 2014), Integrated Change (I-change) model (Cuperus et

⁵ For an overview of the MOSAICS and BART study see Chapter 1 and Appendix 1

al., 2013) and the Macro, Meso, Micro Contextual approach (Ong et al., 2014).

4.5.3 General methodological considerations

The results from the quality appraisal are detailed in Table 4. The studies all referred to separate publications for further details of the context as they were all conducted as part of larger research trials. However, the detail included in the papers regarding context varied and uncertainty regarding context was noted in one of the papers (Cuperus et al., 2013). There was no mention of whether data saturation was reached in three of the studies (Morden et al., 2015, Morden et al., 2014, Ong et al., 2014). Some non-participant characteristics were described in one study however more information is needed to judge the effect of these non-participants on the findings (Cuperus et al., 2013). With regards to data collection, it was unclear in two of the studies how the interview guide or observation schedule were developed (Morden et al., 2014, Ong et al., 2014). The study by Ong et al. (2014) provided less detail in the data analysis methods. Only one study specifically mentioned researcher reflexivity (Cuperus et al., 2013). It was unclear if the same sample was used in two of the studies (Morden et al., 2015, Morden et al., 2014).

Table 4 Quality appraisal of the four included studies

	Cuperus 2013	Morden 2014	Ong 2014	Morden 2015	Areas of uncertainty
1. Was there a clear statement of the aims and objectives of the research?	Y	Y	? ³	Y	³ Aims and objectives not explicitly stated
2. Was there an adequate description of the context in which the research was conducted?	? ¹	Y	Y	Y	¹ Limited description of the context of research
3. Is a qualitative methodology appropriate to address the aims and objectives of the research?	Y	Y	Y	Y	
4. Was the research design clearly described?	Y	? ²	? ³	Y	² Unclear how observation schedule derived ³ No description of interview questions and how derived
5. Was the recruitment strategy and sample clearly described?	? ¹	? ²	? ³	? ⁴	^{1,3} Limited information about the sample characteristics ^{2,4} Small sample of nurses
6. Were the data collection methods clearly described?	Y	? ²	? ³	? ⁴	^{2,3,4} No mention of steps taken to confirm data saturation ² Unclear how observation schedule derived ³ Limited information about data collection methods
7. Has researcher reflexivity been adequately considered?	Y	? ²	? ³	? ⁴	^{2,3,4} No mention of researcher reflexivity
8. Have ethical issues been taken into consideration?	Y	Y	Y	Y	
9. Was the data analysis sufficiently rigorous?	Y	Y	? ³	Y	³ Little information provided on data analysis methods
10. Is there a clear statement of findings?	Y	Y	Y	Y	
11. How valuable is the research?	Y	Y	Y	Y	

Key: Y=Yes; ?=uncertain

4.5.4 Thematic synthesis

An overview of the thematic synthesis is shown in Figure 9. Line by line coding of the results of the four studies included in this review identified 49 initial codes. This was carried out manually by the candidate and as each paper was coded, if no pre-existing code existed to incorporate the meaning of the text, a new code was created. These were checked for consistency throughout the process. For example, some of the text from one study (Morden et al., 2015) was coded as 'implementation benefits patient care'.

The improved "structure" within the consultation also informed the treatment options GPs offered patients

Knowledge of treatments was deemed to be a key change in nurses' usual practice:

I would try and fit that in, in a consultation, about their lifestyle, keep up with exercise. So I don't miss an opportunity if I can.

Whereas before, perhaps I wouldn't be so much aware of it, whereas I am now. For me, it was a positive thing to come out of it (Nurse 4).

After codes were grouped to consider key similarities and differences, seven descriptive themes emerged. For example, the codes that related to the benefits of implementation were grouped into 'clinicians' drivers for implementation' and 'patient expectations and experiences' because findings related to both benefits of implementation for HCPs and patient-reported benefits.

In considering the implications of the seven descriptive themes in the context of the review aims, and following several rounds of iterative discussions, three analytic themes were generated. The three analytic themes: Alignment between best practice, HCP preferences and patient preferences; The importance of implementation researchers engaging with the organisation; and, the disconnect between research and the 'real-world', incorporated the seven descriptive themes. For example, self-management preferences, clinician drivers for implementation, professional roles and responsibilities, perceptions of OA and patient expectations and experiences related to the first analytic theme, 'alignment between best practice, HCP preferences and patient preferences. The external influences descriptive theme related to the second analytic theme, 'the importance of implementation researchers engaging with the organisation'. Finally, the sustaining implementation descriptive theme related to 'the disconnect between research and the real-world. The three analytic themes are described below.

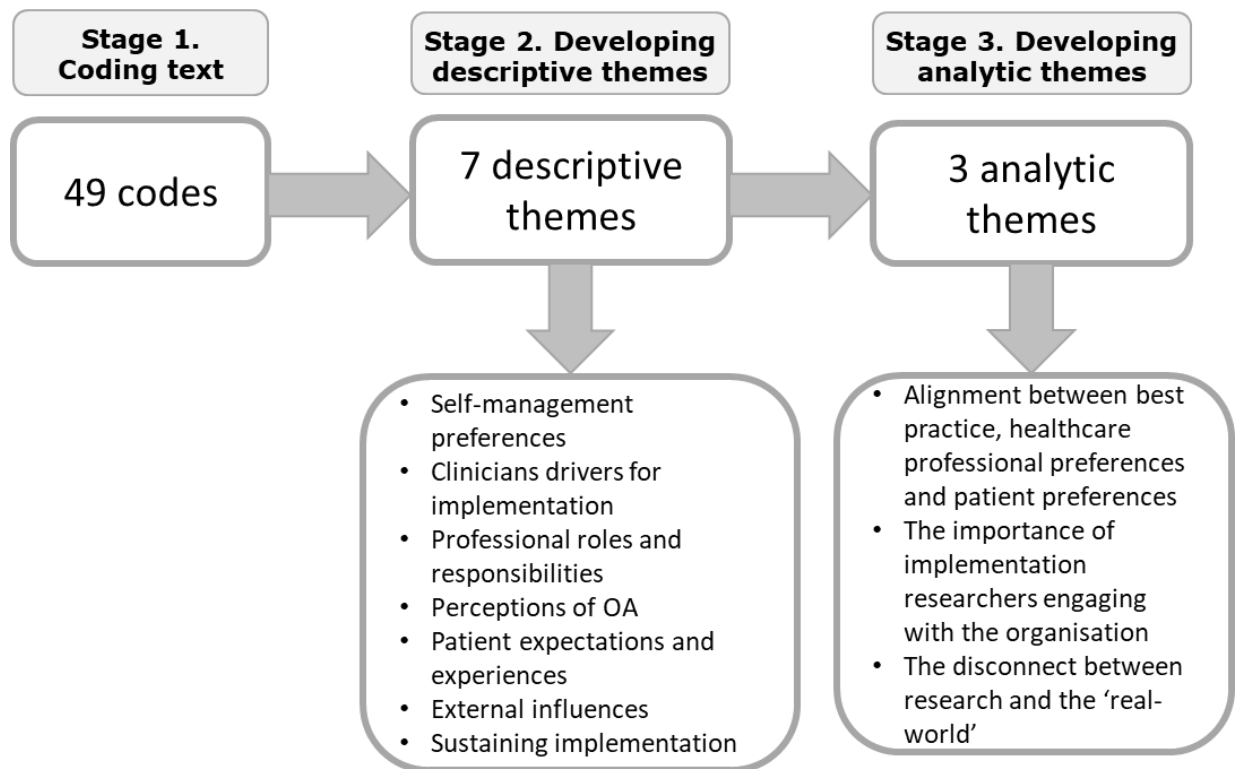


Figure 9 Thematic synthesis process flowchart

4.5.4.1 Alignment between best practice, healthcare professional views, and patient views

The synthesis revealed a gap between best practice recommendations for OA and HCPs and patients' views and preferences toward this. Best practice recommendations were not enough to change practice and several other drivers and motivators of implementation for HCPs and patients were identified.

Individual professional motivators

A range of professional motivators was seen to optimise 'buy-in' to implementation. The studies that explored the experiences of HCPs (Morden et al., 2015, Ong et al., 2014, Morden et al., 2014) reported engagement with implementation because the intervention was perceived to not only

enhance the consistency and provision of quality care (including the messages given to patients) but also gave HCPs more treatment options for managing patients with OA. However, there were several subtle differences in the narratives of GPs and practice nurses.

The implementation of an evidence-based intervention was seen by some GPs as a vehicle to 'dispose of patients' in the consultation and to shift future management of OA to either the patient or the practice nurse (Morden et al., 2015, Morden et al., 2014, Ong et al., 2014). Central to this was the notion of shifting responsibility which 'reframed the dynamics of the consultation'.

GPs also thought that consultations could 'empower' patients to look after their own condition. The guidebook was depicted as a tool to help this process: 'Your book, your thing, I want you to read it all. I want you to bring any questions.' (GP 4), (Morden et al., 2015)

Some GPs used language such as 'empowering patients' to describe this, but interestingly they referred to the fact that in doing so, implementation of best practice inadvertently reduced the burden on them by freeing up consultation time (Morden et al., 2015, Ong et al., 2014, Morden et al., 2014).

Practice nurses, on the other hand, saw the implementation of the evidence-based innovation as a foundation for future consultations and a platform for discussing treatment options (Morden et al., 2014). Furthermore, practice nurses reported engagement with the intervention because it aligned with their desire to increase professional autonomy (Morden et al., 2015).

In addition, GPs reported personal motivators for engagement with implementation including appraisals and continuing professional

development (CPD), whereas practice nurses valued implementation of an intervention that aligned with holistic care (Ong et al., 2014).

Preferences for self-management

The way in which HCPs and patients viewed OA as a condition and perceived the need to self-manage influenced their preference and behaviour with regard to implementation. Findings from the four studies illustrate how patients and HCPs engaged with implementation if the intervention aligned with their preferences for self-management. Despite self-management being aligned with best practice, not all HCPs bought into this or saw it as their role. A range of preferences was reported which demonstrated how a one size fits all approach is not beneficial to implementation.

Barriers to achieving buy-in of implementation were related to the fundamental differences in how HCPs define their role in patient self-management. Depending on clinician beliefs about firstly, whether self-management was of value, and secondly, whether it was their role to advocate and implement it. If the HCP had little interest in the value of the innovation, then they were less likely to prioritise it within their practice, endorse it to patients or attempt to try and convince or 'sell' the importance of active self-management (Morden et al., 2015, Ong et al., 2014, Morden et al., 2014). For example, one GP saw their role merely as a gatekeeper to onward referral to a nurse-led clinic and hence was not motivated to engage in implementation training as they did not perceive it to be relevant to their role (Ong et al., 2014). There was however some evidence to suggest that the training addressed some of the issues related to how HCPs define their

role in self-management, as some HCPs' views of this changed as a result (Morden et al., 2015).

For HCPs whose standpoint was that OA is not a problem, or intervention is futile as the condition will only get worse, then typically they did not endorse self-management and implementation of the intervention (Morden et al., 2015). The scenario described by one GP, whereby the intervention did not align with the GP's perception of patient expectations for a biomedical approach, appeared to create tension as to whether they should implement and endorse the approach (Morden et al., 2015). Findings illustrated that if patients preferred a biomedical approach and not to self-manage, then to some extent this may have been reinforced by GPs' preferences. The data also reported instances of GPs not advocating a self-management approach despite patient preferences to engage with the intervention (Cuperus et al., 2013).

In the instance where a brief explanation of the written information booklet and onward referral to a nurse-led clinic was a timelier way of closing off the consultation and 'disposing' of the patient, then GPs were seen to engage with implementation. This suggests that a lack of buy-in with the self-management approach could be overcome (Morden et al., 2014, Ong et al., 2014). This raises important issues in that implementers could assume that all HCPs would be on board with self-management and while all HCPs may buy into this being important, how they see their own role in this appeared to be very different. There was no evidence in the data to suggest that the implementers were aware of this.

Two of the studies investigated patient experiences of implementation (Morden et al., 2014, Cuperus et al., 2013) and reported a spectrum of attitudes, beliefs, and expectations, dependent on how OA impacted each individual patient. Findings from Morden et al. (2014) showed some evidence that patient beliefs towards self-management shifted as a result of the intervention because it provided them with appropriate knowledge regarding disease onset and self-management. This was not the case in the study by Cuperus et al. (2013), whereby patients who reported not using the guidebook were less positive about self-management and there was no evidence that the intervention shifted their preferences. Implementation was reported by the authors to be influenced by the patient preferences for participation in the consultation and role in supporting their self-management (Cuperus et al., 2013).

Inferred patient preferences (by HCPs)

The level of concordance between what HCPs believed that patients did or did not want from their consultation and management approach for OA appeared to vary. Whilst two of the studies included patient participants (Morden et al., 2014, Cuperus et al., 2013), HCPs interviewed in the studies by Morden et al. (2015) and Ong et al. (2014) also described their perceptions of patient preferences. The extent to which the patient preferences inferred by HCPs were based on experience or beliefs is unknown.

HCPs reported both positive and negative patient preferences for implementing the interventions. For example, in the study by Morden et al. (2015) (that did not include patient data) HCPs discuss patients whom they

perceive to have a 'fixed agenda' and show how HCPs believed that by offering a self-management approach, patients would feel as though they were 'being delayed in their quest to see a specialist'. The following quote illustrates another example where perceived patient preference was reported despite a potential absence of evidence.

A third way in which GPs thought patients gained was from a sense of being taken seriously, or being made a "special" case by being referred to the nurse clinic and were not being "fobbed off" as one GP put it (Morden et al., 2015)

There was no patient data from the study by Cuperus et al. (2013) that supported the fact that patients either felt 'special' or 'fobbed off' as a result of implementing the intervention, however, several patients in the study did report feeling that their OA would deteriorate. This facilitated engagement with implementation for some patients and impeded it for others. The findings from Morden et al. (2015) report that some HCPs perceived that the intervention added to the burden of disease for patients. There is some evidence from Cuperus et al. (2013) to suggest that may be the case for some patients.

I definitely do not want to know everything about my disease

In addition, HCPs also reported how self-management was beneficial for patients, even though there was limited evidence relating to understanding how patients felt about self-managing their OA. Findings also imply that some HCPs were not convinced of patient benefit following the training (Morden et al., 2015).

4.5.4.2 The importance of implementation researchers engaging with the organisation

The synthesis revealed how implementation researchers needed to engage with general practice organisations as well as individuals in three of the included studies (Morden et al., 2015, Ong et al., 2014, Morden et al., 2014). In some instances, there was a discordance between the views, values, and drivers of individuals' clinical practice and that of the organisation.

Consideration of local contextual factors (such as consultation times, practice priorities, capacity and demand issues, patient demographics, technology, and resources) and engagement was a prominent theme in two of the studies that evaluated broader systems-level factors (Morden et al., 2015, Ong et al., 2014). With regards to practice staff, findings illustrate the valuable role the practice managers and administration staff have in implementation in terms of organising new ways of working, allocating tasks, coordinating resources and finances. However, the voice of these staff groups was not heard in any of the included studies.

Whole practice engagement and discussion were reported to optimise implementation along with an understanding of power relations and decision makers within a practice (Morden et al., 2015, Ong et al., 2014). Practice nurse attendance and engagement in meetings and training was considered sub-optimal in one paper (Ong et al., 2014) and it was unclear whether this was due to patient demand and pressures on staffing/clinics or due to the potential hierarchy within the practice in terms of power and leadership. Subsequently, the input required from the nurses for implementation was reported to 'come as a shock' because the nurses were not in the initial

planning meeting even though they would be expected to implement the innovation. The nurses raised concerns regarding implementation which were reportedly ignored by the research team.

Barriers to implementation in one paper included the challenge of sharing knowledge to all team members and the impact of the Quality and Outcomes Framework (QOF) focussing staff attention on other health conditions (Morden et al., 2015). Achieving consistency within a practice in terms of ensuring all staff (including locums) are trained in implementing an intervention was reportedly difficult. In addition, the way in which practices were rewarded and incentivised for meeting QOF targets, significantly affected their prioritisation of workload and desire to implement best practice for a condition that produced no financial gain. This demonstrates the potential discordance in how knowledge is mobilised between research and real-world practice due to complex systems and the need to understand contextual factors.

4.5.4.3 A disconnect between research and the 'real-world'

With regards to sustaining implementation long-term, several issues were revealed that reflect the importance of understanding 'real-world' practice and integrating research to ensure it meets the needs of key stakeholders. However, there was no evidence to suggest whether the approach of the participants towards long-term implementation was anticipated or desired by the implementation researchers.

Interviews and observation of HCPs identified both positive and negative attitudes of HCPs towards engaging with implementation after the research

had ended in two of the studies (Morden et al., 2015, Ong et al., 2014). The thematic synthesis identified two scenarios relating to sustained implementation. Firstly, the long-term routinisation and sustainability of implementation were impacted if relevant outcome measures were not captured and communicated to stakeholders. This resulted in some individuals and practices reporting limited motivators to continue implementing the innovation. Hence, a barrier to implementation for OA was the prioritisation of other policy drivers, for example, the QOF. Some practice nurses expressed concerns regarding the ability to measure and evaluate their role of offering self-management support and lifestyle education.

Secondly, participants described the scenario of sustained implementation of the innovation by accident, whereby they had absorbed elements of the training implicitly. In one study (Morden et al., 2015) the findings illustrated how the structure of the OA consultation was embedded in one GP's routine consultation and they reported no longer needing the prompts and structure of an electronic template. An ad-hoc style of implementation was identified, whereby individuals implemented the components of an innovation that suited their needs. For example, HCPs reported that they would continue to use the written information guidebook if it was freely available and some GPs expressed that they were unlikely to maintain the complete innovation.

Long-term implementation was dependent on leadership and decision making within the practices and this was influenced by the preferences of the decision makers (Morden et al., 2015). Furthermore, in the studies that were conducted during a trial (Morden et al., 2015, Ong et al., 2014, Morden et al., 2014), it was evident that systems-level evaluation could not take place

before completion of the trial due to the protocolised nature. Therefore, the researchers were bound by a requirement to evaluate the trial before the 'next-step' of real-world implementation could be addressed. Despite this, individual level evaluation was ongoing throughout the whole process.

4.6 Discussion

4.6.1 Summary of results

Factors affecting the implementation of evidence-based guidelines for OA in primary care appear to be multi-level and diverse, ranging from individual professional motivators to organisational drivers. This review identified three conceptual insights into factors that influence implementation of evidence-based guidelines for OA in primary care: best practice is insufficient in achieving buy-in for implementation; the importance of whole practice engagement; and, the disconnect between research and the real world. The new propositions generated in light of this synthesis are over and above the findings from the primary studies alone and contribute to an enhanced understanding in the field.

4.6.2 Comparison with existing literature

Best practice was insufficient in achieving buy-in for implementation

This review showed that despite innovations being grounded in evidence-based guidelines, this was rarely the reason stated for HCP or patient engagement. This is not surprising as there is a body of literature which suggests that OA is a low priority to both HCPs and patients and that HCPs' personal beliefs do not always align with recommended guidelines (Egerton et al., 2016, Paskins et al., 2014, Paskins et al., 2013, Thomas et al., 2013a, Jinks et al., 2007). Several theories recognise the importance of motivators which has been exemplified by the synthesis (Harvey and Kitson, 2016, Ajzen, 2011, Michie et al., 2011, Michie et al., 2008).

The findings relating to motivation, values, and beliefs of HCPs or patients align with the *recipient* construct of the i-PARIHS framework which also states that these are important factors for the *facilitator* of implementation to consider (Harvey and Kitson, 2016).

Tacit motivators that optimised HCPs' engagement with implementation were identified. GPs implied that patient 'disposal' in the consultation (by way of referring to a practice nurse or placing the responsibility of self-management with the patient) was a driver for implementation as this freed up their consultation time. May et al. (2004) describe disposal as an action at the end of the GP consultation whereby the GP could cleanly end the consultation. For example, disposal could be via a prescription or by referral to other services. In this data, the use of a guidebook or referral to nurse consultation achieved the same result. By addressing the reality of implementation rather than hypothetical or perceived experiences, this review identified how the notion of 'patient disposal' was revealed implicitly as a way to navigate barriers associated with HCP engagement with best practice recommendations.

Discordance between provider and patient perceptions and preferences for guideline implementation has been reported in studies of diabetes (Larme and Pugh, 1998) and low back pain (LBP) (Schers et al., 2001). Larme and Pugh (1998) reported that patients failed to share the same sense of urgency towards diabetes management as HCPs. This is in contrast to the results of this synthesis that highlighted a broad range of HCP and patient preferences towards recommended best care. Schers et al. (2001) identified similar findings to the present study whereby GPs' interpretations of patient

preferences were a barrier to implementing guidelines for LBP. In looking specifically at OA, the differences between HCPs' views and their perceptions of patient preferences discussed in this review corroborate findings by Egerton et al. (2016). Their evidence synthesis (on the barriers and facilitators to the management of OA) revealed that HCPs' beliefs were 'at odds' with providing recommended practice and reported HCPs' assumptions about patients' preference and adherence to recommended treatment. However, the studies included in the review by Egerton et al. (2016) did not include any patient participants which may illustrate one of the issues relating to variable practice and incongruent perceptions.

The incongruence identified between the innovation and personal preferences for self-management align with the i-PARIHS constructs of *innovation* and *recipients* (Harvey and Kitson, 2016). The authors of i-PARIHS recognise that the relationship between the innovation and recipients is inter-dependent and illustrate how recipients (those who are affected by and influence implementation) can significantly affect the ease of implementation. This also relates to findings on the disconnect between research and the real-world if the intervention is not viewed as a priority by recipients. Whilst Lau et al. (2016) discuss the need to recognise the relationship between the constructs of their framework, in practice, this is challenging as all of the domains are interrelated. It is difficult to separate the findings related to the constructs of intervention from the organisation as the analytical themes derived and reflections about the barriers and facilitators have been generated in the context of the intervention.

The importance of whole practice engagement

This review highlights how whole practice organisation engagement was an important factor in achieving implementation and aligns with the *recipient* and *context* constructs of i-PARIHS and the ways in which *facilitation* assesses, aligns and integrates factors relating to these constructs. For example, the awareness and recognition that implementation researchers have of local contextual factors can help to optimise implementation efforts. Understanding the context of implementation and the importance of organisational drivers are key findings recognised in work by Lau et al. (2016). In their review of 70 systematic reviews, the authors report how organisational factors such as culture, inter-professional relationships, and involvement, such as collaborative working, and support, facilitated implementation. These findings, however, were drawn from studies conducted on a range of conditions. Similarly, in a study evaluating clinical practice guideline uptake in OA and RA, Lineker et al. (2009) found interprofessional learning and networking were beneficial for successful implementation. Although limited qualitative findings were reported, the involvement of lay people and patient partners were valued in implementation.

Whole practice engagement was reportedly challenging in terms of sharing knowledge throughout a practice and seeking the views of potentially important individuals such as practice managers. Despite being reported as important in implementation, and evidence suggesting they drive the decisions for involvement in implementation, the experiences of practice

managers were not captured within the studies included in this review (Kennedy et al., 2013).

Local contextual factors, such as practice priorities, appeared to negatively affect implementation despite the motivators and actions of the individuals working within the general practice organisation. Organisational drivers did not always align with individual drivers and this affected the potential for ongoing implementation. For example, the QOF was a reported barrier to long-term implementation in one of the studies and appeared to influence HCPs' prioritisation of workload. Kennedy et al. (2010) also report a lack of whole practice involvement and the prioritisation of other policy drivers as barriers to implementation in their process evaluation of implementing a self-management support approach. Self-management was not viewed as core business by GPs or aligned to pay-for-performance targets, therefore the implementation of the approach was reported to not provide any benefits to the practice. These findings were not in the context of musculoskeletal conditions.

The disconnect between research and the real world

A discordance between research and the real-world was revealed by the synthesis where participants were engaged in the trial but reported unlikely to adopt the innovation long-term (Morden et al., 2015). It is not clear from this review whether the outcome of implementation aligned with implementation researchers' expectations, but the findings illustrate the value of engaging with the whole practice organisation and identifying factors experienced rather than perceived which may have even more limited applicability in real-world implementation.

The findings of this synthesis suggest that leadership, motivation or desire to continue, and evaluation were important elements of sustained implementation, which in i-PARIHS terms relate to the *recipients, facilitation, and context*. Given the challenges of real-world implementation, conducting implementation research in trial conditions may not capture the relevance and reality of what happens in practice (Proctor and Rosen, 2008). For example, evaluation of relevant outcome measures may be impeded by research constraints such as funding timelines as reported by Lineker et al. (2009) thus illustrating how evaluation may vary between research and real-world settings.

Three of the four studies included in this synthesis were conducted in the context of research trial conditions which can result in participants viewing the research as peripheral to their current practice and lacking motivation towards engaging in implementation. This has been reported in an implementation study in low back pain by Tooth et al. (1998). In addition, Kennedy et al. (2014) report how a trial for self-management in long-term conditions was well implemented with good reach and recruitment, yet engagement from the trial did not translate into everyday practice. This could be related to the perceived low priority of self-management, or because the natural dimensions of the real-world are controlled for in trial conditions which may exacerbate the disconnect between research and the real world.

The review provided little data to support the facilitation element of i-PARIHS, which may be because the studies were conducted in the context of research trials. Therefore, uncertainty exists as to how research findings are taken forward into real-world implementation, and by whom. The findings from this

review were generated from studies with a focus on NPT, particularly the coherence construct and this may have led to other important factors being missed. NPT focusses on organisational and professional contexts that complex interventions are embedded in, this may explain the generation of analytic findings in this review.

4.6.3 Strengths and limitations

Methodologically, this review has several key strengths. Published guidance on the conduct of thematic synthesis was followed (Thomas and Harden, 2008) and rigorous methods employed with a 'tried and tested' structured approach that included a comprehensive, systematic search of published literature using predetermined criteria to improve the transparency of the final findings. The explicit, transparent synthesis that respected the context and complexity of the included studies is another strength of this review. The inductive method adopted for the thematic synthesis of the review enabled a critical, in-depth analysis and synthesis of the data from the four primary studies.

An over-inclusive approach to the full-text review stage of the search was adopted as a result of the scoping search, to avoid excluding potentially relevant studies. Two reviewers were involved in undertaking quality assessment and the thematic synthesis which is potentially subjective and reliant on the reviewers' judgements and decisions (Thomas and Harden, 2008). However, in this review, it enabled inter-researcher differences to be examined and discussed, yielded new insights, made connections between data clearer, and increased the transparency and trustworthiness of the synthesis. Both reviewers were reflexive throughout the process and mindful

of this throughout the iterative stages of analysis, which was also reviewed by the whole study team.

Another strength to this review is that the synthesis process adopted provided a theoretical structure whereby a range of concepts from the primary studies were interpreted and configured to create higher order concepts and analytical categories (Thomas and Harden, 2008). This addresses criticisms by Dixon-Woods et al. (2005) relating to the difficulties in generating higher order themes, by proposing distinct phases to the synthesis that incorporate descriptive data-driven themes (stage 2) and analytic theory-driven themes (stage 3). This allowed for a higher-level analytical abstraction and a nuanced appreciation of the evidence included in this review. In addition, the method facilitated explicit production of new concepts (analytical themes), theory and subsequent conclusions that offer deeper conceptual thinking about factors affecting implementation in primary care which could not have been derived from the primary studies alone (Harden and Thomas, 2005).

This work has contributed to literature in the field by exploring experienced factors influencing implementation rather than perceived factors. Exploring what happened when implementing evidence-based guidelines for OA, rather than what stakeholders *think* might happen, has informed knowledge and provided enlightenment on real-life circumstances and also explored and developed theory in this area (Gough et al., 2012).

A limitation of this systematic review is the paucity of qualitative studies directly examining the implementation of evidence-based guidelines for OA in a primary care context. This highlights the challenges and complexity of

mobilising research evidence into practice and indicates that this research area may be being overlooked. In addition, as with all systematic reviews, it is possible that not all relevant studies were identified. However, Gough et al. (2012) state the purpose of a thematic synthesis is to find sufficient studies to explore patterns and concepts that are relevant and contribute to the review and that reviewers should not be overly concerned as to whether the review was exhaustive. Therefore, despite the low number of studies concerning a specific population in this review, the depth of critical analysis and concepts yielded is a valuable strength of the work that contributes to building the knowledge base. Another limitation of the approach taken is the potential for both cultural and publication bias as this review only included studies that were published in English and three of the four studies were conducted in England.

Given that three of the included studies were set within the same context of the MOSAICS study, the transferability of findings may be limited. Evidence from these studies focused on one geographical area and one context and some of the themes may be more prominent as a result of this. In addition, two of the four studies included in the review used NPT as an underpinning theoretical approach (Morden et al., 2015, Ong et al., 2014). Whilst the use of one underpinning theory may have imposed constructs on to the data, it may have also helped to generate further insights. However, it is possible that the results of this synthesis may be swayed by the use of NPT in the primary studies.

There is however evidence of the evaluation of existing OA models of care being conducted. The process evaluation of the implementation strategy for

the SAMBA model, and the proposed qualitative study to explore the barriers and facilitators to implementation in the PARTNER study, were briefly mentioned in Chapter 1 (section 1.6) and are not yet published. In addition, the updated search for this systematic review revealed international research activity in the field, however many of the studies that had the potential to inform the findings of this review were conference abstracts and not yet published as full-text articles (Swaites et al., 2019, Quicke et al., 2019, Nelligan et al., 2018).

Methodological considerations of the included studies identified in the quality assessment revealed how reflexivity was rarely reported. Whilst this is unlikely to affect the overall synthesis product of this review, it is an important issue to address as implementation researchers may be embedded within the practice and/or part of the team designing the trial and/or intervention that they are researching. If participants in the included studies perceived the interviewer as part of the implementing team this may have influenced their responses to the interview. Similarly, if the researchers were involved in intervention development this may influence their analysis. For this review, the lack of reporting relating to data saturation, and in some cases small sample sizes is a further issue as there may be a chance that key concepts were not identified in the primary studies.

Another potential limitation of the included studies was that the views of commissioners or practice managers were not obtained. This information may be published in reports or grey literature or may not be captured. Whilst not searching unpublished/grey literature may have resulted in some relevant information being missed, conceptual saturation was achieved

(Thomas and Harden, 2008). This highlights a need to integrate the experiences of all key stakeholders, to advance thinking in the field and benefit real-world primary care practice for a wide audience.

4.6.4 Implications for implementers

This review identified three important issues for implementation practice. First, arguably, patient-related evidence may be needed to achieve successful 'buy-in' of the intended users of research and gain a more thorough understanding of patient preferences towards self-management for OA, and potentially challenge HCP perceptions of patient preferences. The role of PPIE in implementation is important and often under-acknowledged and underutilised. Explicitly engaging people with OA at the beginning of the process can directly address or challenge any HCP concerns relating to patient perceptions and 'buy-in' up front. Drawing upon the lived experience of people with OA may help implementers and ensure the successful uptake of evidence-based best practice recommendations that are relevant and usable. Second, it is essential that implementers are cognisant of factors that influence implementation and understand the individual motivators and values of HCPs and patients. One way of achieving this may include the development of partnerships between research producers, implementers, and users by consulting people with OA and utilising their expertise to better understand patient preferences (Lomas, 2000). Third, these findings highlight the importance of engaging with the whole practice to better understand potential barriers and enablers that can facilitate the alignment of best practice, patients and HCPs.

4.6.5 Implications for research

Given that three of the four studies included in this review were conducted in the context of the MOSAICS study, more research conducted in other contexts is necessary to gain a greater understanding of the factors influencing implementation in OA. To ensure sustained engagement and long-term buy-in to implementation, the ways in which participants from an implementation trial progress to 'doing' implementation in the real-world need to be identified and understood. Theoretically, research into the role of the facilitation domain of the i-PARIHS framework may assist this. In addition, more research is needed that focuses on implementation in real-world clinical settings because the practice situation differs from the context in which the research is conducted. Where possible, implementation researchers should be more reflexive and conduct more qualitative research into the process of implementation in the context of clinical practice, to develop a better understanding of the factors and potential strategies that may optimise success.

Traditionally, research and implementation have been viewed as separate entities and this may be one reason why the true experience of implementation is not captured in research studies as this typically occurs after the intervention research has ended. With regards to the research agenda in implementation, it is important that researchers explore the missing step as to what happens at the end of an implementation research study. If academics focus solely on the research phase of their work and 'hand over' to the clinicians for subsequent implementation, then sharing of relevant information may be missed. Targeted implementation strategies that

are an integral part of health research applications and not a tokenistic 'bolt-on' may facilitate this.

This review has highlighted gaps relating to understanding the role of PPIE and the views of practice managers in implementation research in primary care. One way to overcome these challenges is for key stakeholders (researchers, implementers, patients, and HCPs) to be involved in implementation research from the start of the research-implementation journey. Co-production of both implementation research and practice is recommended as a way for key stakeholders to work together in ensuring that factors affecting implementation are understood from the outset and to maximise the potential for success.

4.7 Conclusion

This chapter presented a systematic review and thematic synthesis of the factors that influenced the implementation of evidence-based guidelines for OA in primary care. The review incorporated the perspectives of patients and HCPs to address an important research gap in this context, and a rich, detailed synthesis of the included studies has been provided. Three analytical themes were presented and the implications of these on theory, practice and research were discussed.

This review has contributed to knowledge regarding HCP motivators for implementation and how engaging with the whole practice can optimise the process. This review has also advanced understanding of the disconnect that exists between research and 'real-world' clinical practice. However, there remains a need to further explore the true experiences of key stakeholders involved in implementation.

In applying the i-PARIHS framework to help interpret the findings, insights into the recipient construct, relating to motivations, values and preferences, have been identified. Furthermore, the ways in which a whole practice approach relates to the recipient and context domains of the framework were illustrated. The disconnect between research and the real world can be explained by a discordance between the innovation and recipient domains of the i-PARIHS framework which suggests that facilitation may play an important role in aligning these constructs to achieve change both within individuals and organisations.

The findings have informed the next stage of the thesis by identifying three key areas for further exploration: (i) the transition between research and the real-world, (ii) the role of facilitation in implementation, and (iii) the role of PPIE in implementation. This will allow clinicians and researchers to better understand the factors that help or hinder the process and to target research studies towards more optimal implementation strategies.

The following chapter describes the rationale and methods of the empirical components of the thesis in detail along with discussion relating to the justification for the selection of an underpinning theoretical approach, PPIE, ethical considerations and researcher reflexivity relevant to this thesis.

Chapter 5: Research methods

5.1 Introduction

The empirical work in this thesis comprises a systematic review, multi-qualitative methods (analysis of focus group data, individual interviews and triangulation of the data sets), and a stakeholder engagement consensus exercise. The previous chapter has presented a systematic review and thematic synthesis exploring the factors that influence the implementation of evidence-based guidelines for OA in primary care. This chapter firstly presents an overview of the study methods, a discussion of some of the issues relating to the decisions made regarding study methods, and the justification and selection of an underpinning theoretical approach relevant to this thesis. The chapter goes on to describe the methods of each component of the thesis in detail. Finally, the chapter presents a discussion on PPIE, ethical considerations and researcher reflexivity relevant to this thesis.

5.2 Overview

Five different research methods were used to investigate the process and experiences of KM for OA in primary care. An overview of the stages of empirical research conducted in this thesis is shown in Figure 10 and a more detailed representation of the study design in Figure 11. A brief rationale for including these different methods and the objective addressed by each method is outlined below.

- A systematic review was conducted to identify, appraise and synthesise qualitative research that investigates the factors that influence the implementation of evidence-based guidelines for OA in primary care (objective 3)⁶
- Secondary analysis of focus group transcripts was conducted to evaluate KM activity to share practice-based learning and understand early adoption from a research trial (objective 4)
- Individual interviews were conducted with a range of individuals (lay representatives, HCPs, GPs, commissioners, researchers, project managers) to understand a range of experiences and perceptions of key stakeholders involved in an OA implementation project and identify the factors that optimised KM (objective 5)
- A triangulation protocol was conducted to synthesise findings from the thesis studies and to develop draft recommendations to enhance KM relating to OA in primary care (objective 6)

⁶ Objectives 1 and 2 are addressed in Chapter 2 and 3 respectively

- Stakeholder engagement consensus methods were used refine the recommendations and to inform the development of a toolkit for enhancing KM for OA in primary care (objective 7)

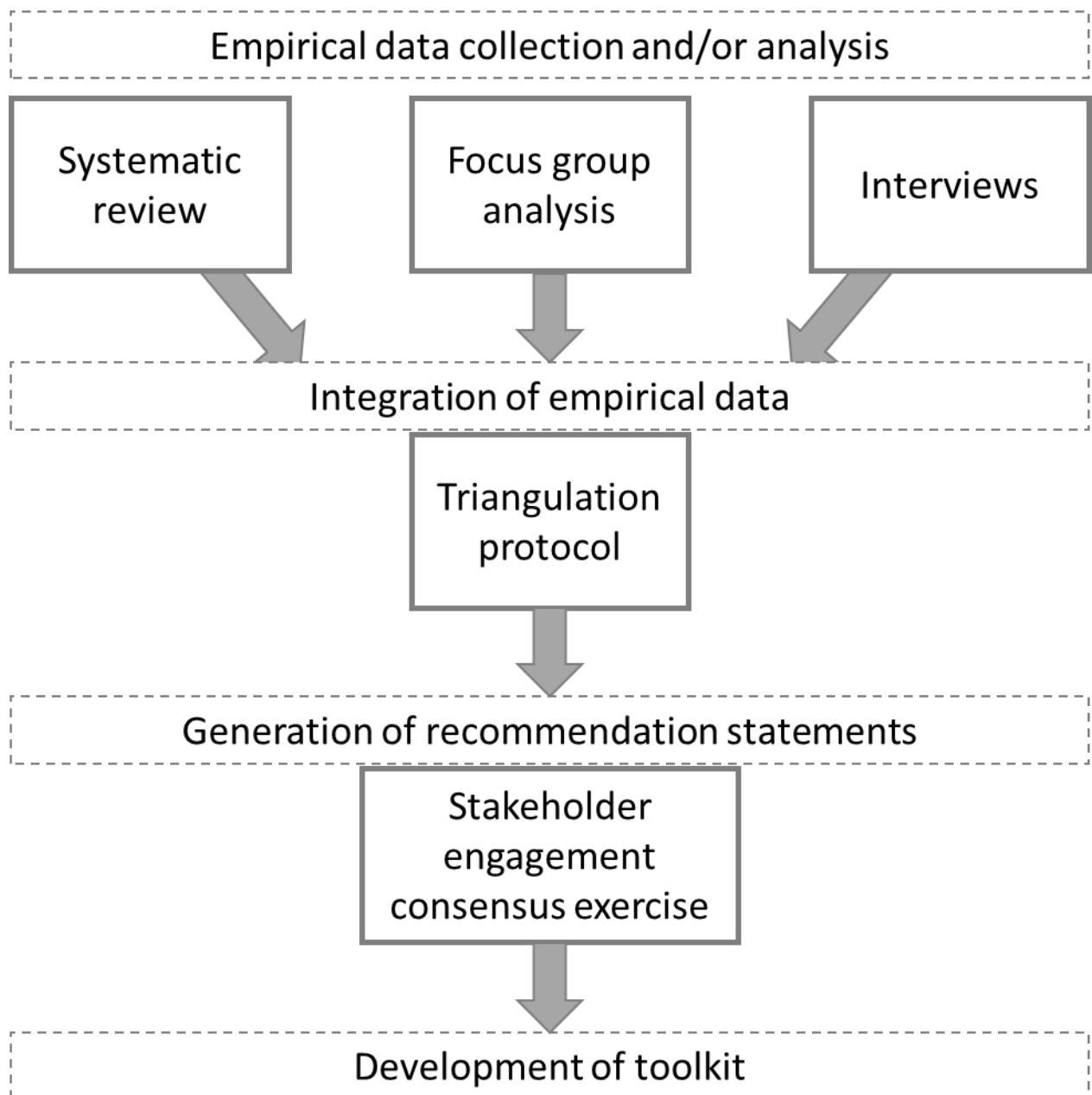


Figure 10 Overview of empirical research conducted in this thesis

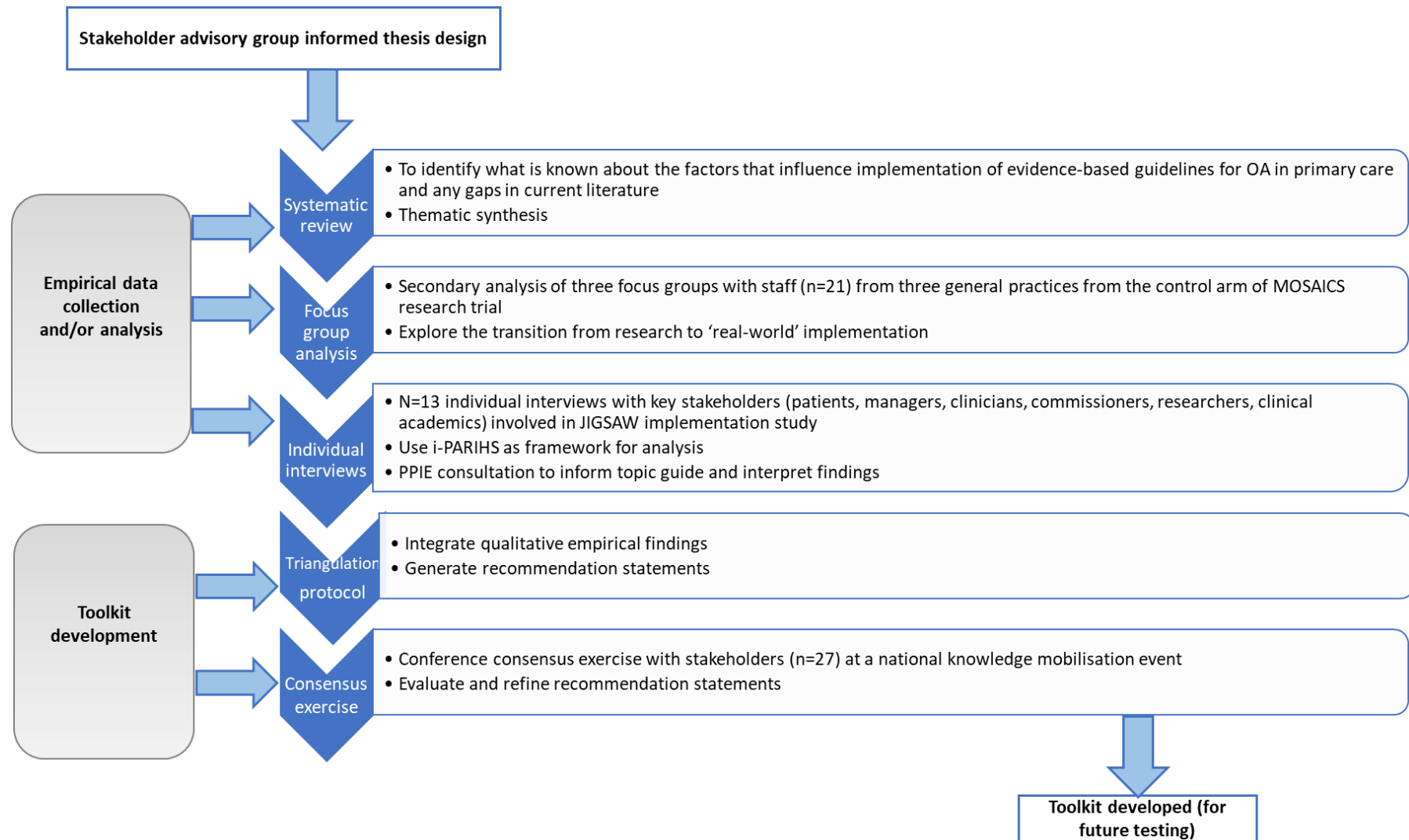


Figure 11 Study design

5.3 Methodological considerations for the thesis

The study was originally conceptualised as a case study but in the early stages of design and data collection, it became apparent that this may not be practicable or appropriate. Despite the strengths associated with case study design, there were some methodological concerns relating to its use in this thesis.

Case study is an appropriate methodology to use when understanding is sought in relation to real life events. The case or cases are explored in-depth in the context of how they happen (Yin, 2014). A hallmark of case study research is the use of more than one data collection method (Yin, 2014). Furthermore, a case study requires a clearly defined boundary, for example, an organisation such as primary care practice or small groups such as groups of GPs. It was originally intended to conduct a multiple case study within three general practices, however, several issues relating to the design and data collection were identified.

Due to the retrospective nature of the phenomena under investigation, observations of the implementation process (such as planning meetings between implementation researchers and general practice staff) would not be possible. Documentary analysis was also considered, however after extensive discussion amongst the supervisory team and research ethics committee, it was concluded that documentary analysis was not feasible for several reasons. Firstly, ethical approval had not been sought at the time that JIGSAW meetings were conducted for the notes to be used in research, and secondly, the inclusion of upcoming documents such as presentations, webinars, abstracts, and posters would be unlikely to add any additional

insights to the interview and focus group data. These factors compromised the use of case study design.

Furthermore, during the early stages of data collection and analysis, it became apparent that many of the interview participants had roles which spanned multiple boundaries. By nature of the roles of some of the individuals interviewed, cross-boundary working, and cross-fertilisation was beginning to emerge as a key factor in implementation success. This posed a threat to the potential boundary of the case study which is suggested by Gibbert et al. (2008) to be one of the major flaws of case study design. This unanticipated initial finding also had implications for within case and cross-case analysis. Due to the exploratory nature of the research aims, it was felt that the boundaries should not be fixed at the early stages of the study to allow flexibility in the approach.

With any qualitative research, there is a need for the research design to be flexible and responsive to emerging findings. Morse et al. (2002) describe the need for researchers to be responsive to the data and proactive in taking responsibility for rigor throughout all stages of research and not just at the end of the study. They advocate researchers revisiting the methodological coherence between the research questions, assumptions, and data, throughout data collection and analysis and state that *'a lack of researcher responsiveness is one of the biggest threats to validity'*.

Following careful consideration and iteratively revisiting the research aims, assumptions, and preliminary findings, it became clear that the emerging data did not lend itself to having clearly defined boundaries for each case and it had been wrongly assumed at the start of the study that the general

practice organisations would be distinct cases. Given that only one type of data was likely to be used in this work and considering the unclear boundaries of potential cases, it was decided that a case study design was not appropriate for this thesis and a mixed qualitative methods approach was more appropriate.

5.4 Theoretical considerations

In selecting a theoretical approach for use in this thesis, three initial considerations were of prime importance:

1. The approach needed to enable understanding and explanation of the factors that influence KM
2. The approach needed to address organisational factors
3. The approach needed to address contextual issues, specifically to better understand any distinctive features of primary care that affect KM

The theoretical approach adopted needed to be consistent with the underlying worldviews about knowledge and KM described in Chapter 2. The stakeholder advisory group (presented in Chapter 3) identified three other important components: flexibility in the approach, the ability to address the role of patients, and acknowledging the 'doing' or active component of KM.

Had a case study design been adopted, then ACAP or CoP would have been suitable theoretical approaches to address the aims of this thesis. ACAP would have enabled an understanding of how knowledge was mobilised within each general practice organisation and provided an informed view relating to how the organisations learn. The approach would have illuminated the processes that took place within each general practice, from identifying the knowledge to implementing it in clinical practice. Whilst CoP had the potential to help understand and explain some of the processes that occurred, the methods adopted for this thesis would not have enabled the extent of the CoP to be recognised as observations were not being conducted. Given the factors

considered relating to a case study design and the feedback gleaned from the stakeholder advisory group, it was decided that i-PARIHS was the most suitable underpinning theoretical approach to be adopted for understanding the empirical work in this thesis.

The i-PARIHS framework recognises that context and facilitation are integral to successful KM in clinical practice and reflects the multifaceted and dynamic nature of KM in practice. This is particularly relevant for this Ph.D. which seeks to better understand the contextual factors and circumstances from research to real-world, to identify whether implementation was successful and the reasons for this. A clear relationship between aspects of the constructs is evident within the i-PARIHS framework and it can provide a comprehensive structure for data collection and analysis for this thesis. The *recipients* construct encompasses the potential role of patients and the public more broadly and the *facilitation* construct addresses the active component associated with KM. The i-PARIHS framework was chosen to enable a theory-driven approach to inform data analysis and to achieve the aims and objectives of this thesis set out in Chapter 1. The specific use of the theory is described throughout the methods.

5.5 Overview of methods

The following sections provide a detailed account of the methodological considerations and methods chosen to undertake the empirical work within this thesis. The first section briefly describes the systematic review methods as these have been presented in detail in Chapter 4. This is followed by the focus group and interview methods collectively, and then the approaches adopted to derive recommendation statements and develop the KM toolkit.

The final sections report PPIE, ethical considerations, and researcher reflexivity.

5.6 Qualitative methods

5.6.1 Overview

To address objective 4, transcripts of previously conducted focus groups with GPs and HCPs from general practices involved in an implementation trial were analysed to evaluate KM activity to share practice-based learning and understand early adoption from a research trial.

To understand a range of experiences and perceptions of key stakeholders involved in an OA implementation project and identify the factors that optimised KM, to address objective 5, individual interviews were conducted with a range of individuals.

The following sections present the study setting, sample and recruitment, data collection and data analysis methods for both the focus group and interview sub-studies.

5.6.2 Study setting

Focus groups

An overview of the context of the focus group study is illustrated in Figure 12 with the area of focus for this thesis highlighted in red.

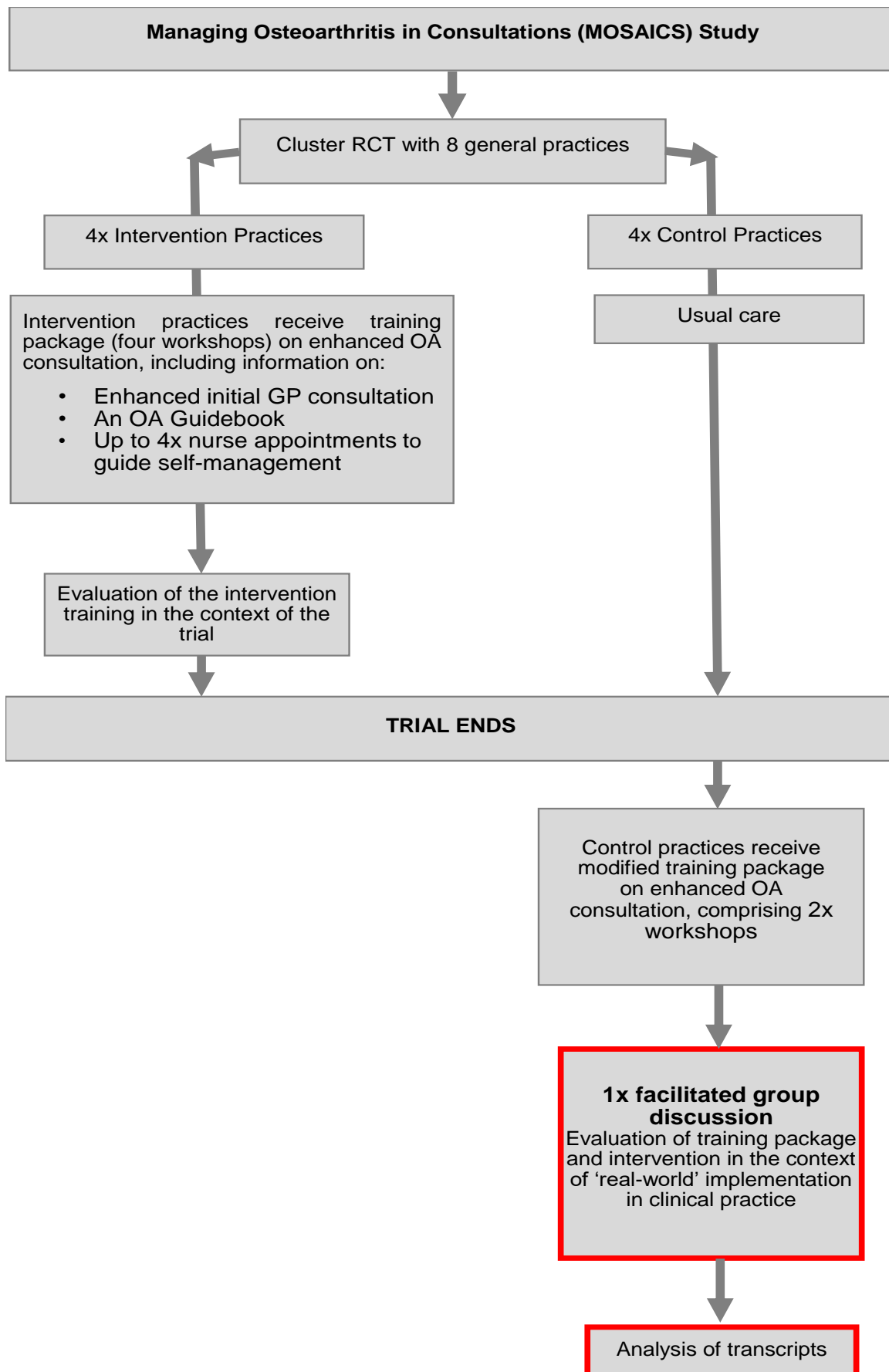


Figure 12 Context to the focus group study

The focus group study was set in the context of a research implementation trial. The MOSAICS protocol and trial results have been published elsewhere (Dziedzic et al., 2017, Dziedzic et al., 2014a) but, briefly, the aim of the study was to evaluate the effects of a complex intervention, designed to enhance the OA consultation, on cost and clinical effectiveness, and improvements in quality of care. The trial involved eight general practices, four of which delivered the intervention and four control practices which delivered usual care. The intervention design and development was guided and underpinned by several theoretical frameworks (the Theoretical Domains Framework, the Whole Systems Informing Self-Management Engagement model, NPT, a framework for translating evidence into practice by Grol (1997) and the Calgary-Cambridge framework (to enhance consultation skills) and shaped by key stakeholders including patients and the public (Porcheret et al., 2014, Porcheret et al., 2013b, Dziedzic et al., 2014a). The intervention comprised:

1. A model OA consultation consisting of an enhanced GP consultation to make and explain the diagnosis of OA
2. An OA guidebook giving written information
3. Up to four follow-up appointments with a practice nurse to guide self-management
4. Training for healthcare professionals (HCPs) on components 1-3 (Porcheret et al., 2013a)

The trial showed no benefit in cost and clinical effectiveness but improved quality of care at no additional cost, increased self-management and reduced referrals to orthopaedics.

On completion of the trial, but before the results were known, the four control practices received a refined, evidence-based training package on the components of the enhanced OA consultation based on the training received for the intervention practices as part of the original study. The purpose of the training for the control group practices was to retain engagement and offer the practices a reward for their participation, but also to share the practice-based learning that had arisen as part of the trial (Porcheret et al., 2018, Porcheret et al., 2014). Table 5 outlines the content, delivery, purpose and duration of the training delivered to the intervention and control group practices.

Table 5 Components of the training package delivered to the intervention group and the control group in the MOSAICS trial

	Intervention group	Control group
Development of training package	Informed by Michie Theoretical Domains Framework (Michie et al., 2005)	
Content	Provided information on establishing the current practice, core NICE recommendations for OA (diagnosis, written information [the OA guidebook], exercise and physical activity, healthy eating, pain management), history taking and self-management support	
Delivery	A mixture of didactic and interactive sessions (including the use of simulated patients) which were learner centred and facilitated by local opinion leaders	
Purpose	Ensure standardised trial delivery	To engage practices, incentivise participation and as a knowledge mobilisation activity
Duration	<p>GP training - four sessions (2-hours x3, 1-hour x1)</p> <p>Practice nurse training – four days</p>	<p>Three sessions over a three-week period, after completion of trial.</p> <p>First two sessions:</p> <p>GP training – 2x lunchtime session</p> <p>Practice nurses – 2x one-day workshops</p> <p>Final session: a focus group discussion with the whole practice, led by a facilitator who had been involved in MOSAICS as a rheumatology advisor (ZP)</p>

The focus groups (described as a 'facilitated group discussion') were conducted following the training with the original purpose being to (i) investigate how the delivery of a training package post-trial prompted and enabled changes in care for patients with OA in the control practices of the MOSAICS trial, and (ii) understand to what extent a group discussion contributes to thinking about changes in practice. A brief analysis was conducted at the time of the study to inform further iterations of the training package. The original analysis of the focus groups is reported in the NIHR programme grant report (Hay et al., 2018).

The aim of the secondary analysis of the focus group transcripts was to evaluate KM activity to share practice-based learning and understand early adoption from a research trial. This differs from the original aim by focussing on KM which is a much broader construct than the training package alone.

Following the focus groups, the training package that was delivered to the control group practices has been scaled up more widely and has gone on to be delivered as part of a national and international implementation project. In addition, one of the practices involved in this process went on to be the catalyst for the JIGSAW implementation project.

<https://www.keele.ac.uk/pchs/implementingourresearch/makinganimpact/osteoarthritisandosteoporosis/jigsaw/>

Interviews

The interview study was set in the context of the JIGSAW implementation project (see Chapter 1, section 1.5) which evolved following the MOSAICS study.

5.6.3 Sample and recruitment

Focus groups

The focus group study involved secondary analysis and the candidate was not involved in recruitment. In brief, all general practices in the control arm of the MOSAICS trial were invited to participate in the 'facilitated group discussion'. Focus groups were conducted with HCPs working within the control practices that had received the refined training package after completion of the trial.

Interviews

Potential interview participants were purposively sampled initially to identify a broad range of individuals and experiences from within general practices, for example varying demographics and professions. These could have been any individuals working within or linked to, general practices that had been involved in either MOSAICS or JIGSAW, including GPs, practice nurses, commissioners, and patients. This was to ensure collection of data covering a range of beliefs and experiences relevant to the research objective. A snowballing technique, in which existing study participants identify other potential participants from among their acquaintances, was then used to identify other key individuals within their network. The criteria for the snowball sampling were respondents who had been involved in the implementation of JIGSAW and who were perceived to have insight into the process.

The recruitment process for individual interviews is shown in Figure 13.

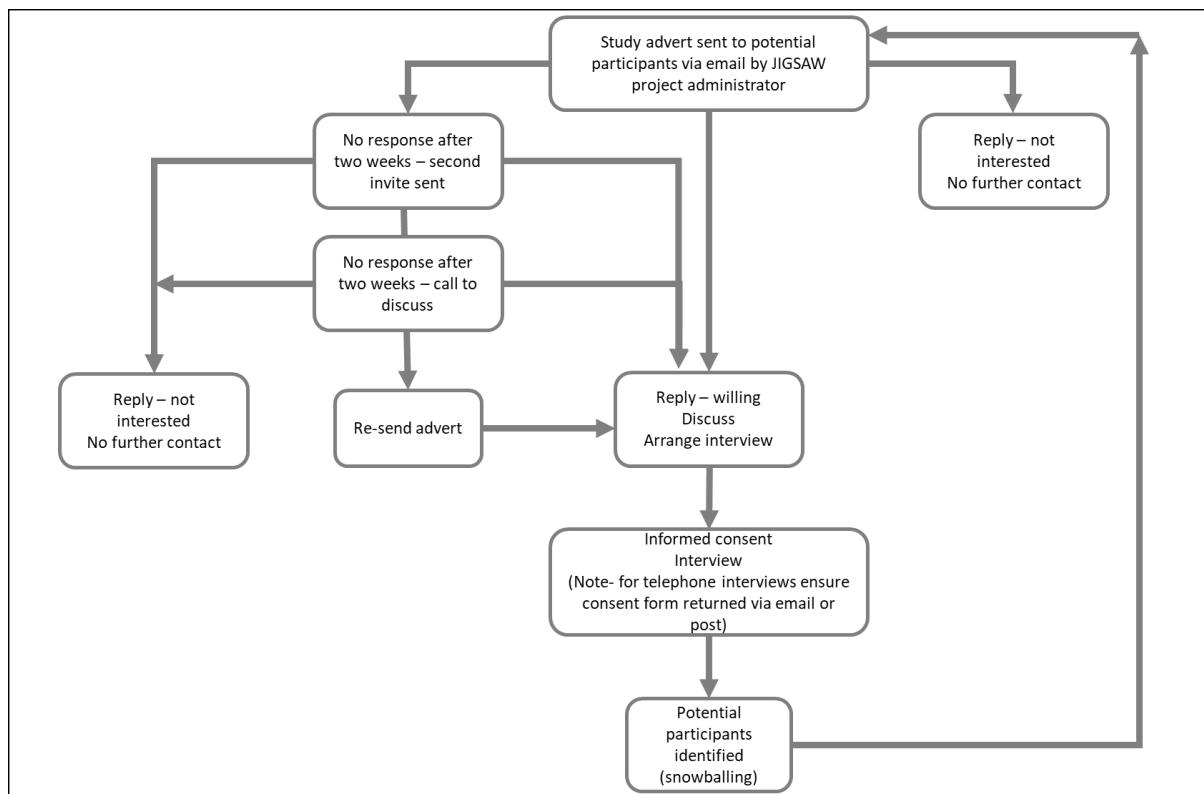


Figure 13 Recruitment process for interview study

Eligible candidates were sent the study details via email, using the JIGSAW mailing list, from an institutional project administrator and were invited to contact the researcher to obtain further information. If interest was expressed, the participant information sheet and consent form were then emailed (Appendix 6 and 7). Those willing to go ahead with an interview were contacted by email to arrange an interview at a time and place suitable to them. If a response was not received within two weeks, a second invite was sent, and a follow-up telephone call made if no response was received after a further two weeks. No further attempts to contact the individual were made after this point. Sampling continued concurrently with data collection and analysis until no further themes were identified from successive interviews, otherwise known as saturation (Bryman, 2008). Participants were offered remuneration (£80) for their time for an interview.

5.6.4 Data collection

Focus groups

Focus groups were facilitated by a rheumatologist, a member of the MOSAICS study team and experienced qualitative researcher (ZP), between June 2013 and July 2013. ZP was involved in delivering the training in the intervention practices, but not in the control practices and so was unknown to participants. The discussions were led with a semi-structured schedule (Appendix 8) which included questions relating to the perceptions and experiences of implementing the enhanced OA consultation and making plans for future implementation.

Interviews

Interviews were carried out over an eight-month period (February 2018-September 2018) by the candidate following in-depth training completed one year previously. A semi-structured interview approach was adopted. An initial topic guide was informed by the systematic review of the literature and stakeholder advisory group and was informed by theory (i-PARIHS). This was reviewed and critiqued by the research team and a pilot interview with a peer was conducted to reflect on and refine the guide by ensuring questions were relevant to the aims of the study. A bespoke topic guide was then developed for each interview based on emergent findings and considering the professional discipline of the participant (Appendix 9).

The topic guide was modified and refined during data collection and analysis, to test ongoing interpretations and further examine anomalous responses, consider emergent themes from the initial interviews and to adapt to the

diversity of participants accessed via snowball sampling. The initial schedule broadly addressed the following areas:

- The participants' role and involvement with MOSAICS or JIGSAW
- Experiences of implementation from MOSAICS to JIGSAW
- Perceptions and beliefs relating to barriers and facilitators of the process
- Perceptions and beliefs relating to factors affecting KM and implementation in general practice organisations

The topic guide facilitated discussion during the interviews and the semi-structured approach provided overarching subject areas whilst giving the researcher flexibility and freedom to respond to emerging themes and explore, probe and ask questions to illuminate the participants' perspectives of KM and implementation. The candidate exercised caution when asking questions to ensure they were neutral, clear and open.

5.6.5 Data analysis

Focus groups and interviews

The secondary analysis of the focus group discussions and primary analysis of the interview data was conducted by the candidate. The analysis of the focus group data took place prior to conducting the interviews and informed the development of the interview topic guide by identifying areas for further exploration. Qualitative supervisor (ZP) and the rest of the study team (KD, AF) reviewed the data and coding to enhance and confirm the analytic procedure and interpretations.

The conduct of data analysis was informed by the principles of thematic analysis as it provides a pragmatic, structured approach, that is not aligned to any epistemological position. It is well suited to semi-structured interview and focus group data as it allows detailed analysis of key themes, whilst recognising the importance of, and retaining, the individual's contextualised views (Braun and Clarke, 2006). The analysis took an inductive (data driven) and deductive (guided by the literature) approach. This is referred to in the literature as an *abductive* or *hybrid* approach where a combined technique of inductive and deductive thematic analysis is used to identify codes, categories, and themes within the data (Lipscomb, 2012).

The benefit of a hybrid approach is it enables data to be interpreted considering the original research objectives, the results of previous empirical work, and new emergent concepts. This allows the characteristics of and differences (themes) between the data to be identified (emerge) while allowing components of the theoretical framework (i-PARIHS) to be integral to the process (Fereday and Muir-Cochrane, 2006). In inductive coding, transcripts are mainly coded from the data on the basis of informants' perceptions and experiences, therefore, the analytic lens does not dominate the emerging story; the deductive coding draws upon theoretical constructs to help interpret and explain patterns amongst the data (Braun et al., 2014).

The process of thematic analysis followed various stages and the process was iterative and reflexive, with data collection and analysis being undertaken concurrently (Fereday and Muir-Cochrane, 2006). A six-step process of thematic analysis was adopted to identify, analyse, and report patterns (themes) within the data. This is illustrated in Table 6. Data (transcripts and

field notes) were imported from word documents into a computer-assisted qualitative data analysis (CAQDAS) package, NVIVO 11, to aid data organisation, storage, and retrieval, as well as recording memos and making links between sections of text as part of the analysis (Tesch, 2013).

Open coding took place to further develop codes and definitions to guide data categorisation. Double coding of a sample of transcripts was completed by the candidate and qualitative supervisor (ZP) independently to enhance reliability and rigour. Following this, the coding was compared, and initial interpretations discussed with the other two members of the study team (AF, KD). Attention was paid to the interactions that took place between participants in the focus group data (Kitzinger, 1994).

The data were subject to several iterative stages of repeated coding, recoding and memo writing, to generate themes and ensure the coding framework could be used to explain the data. Through multiple discussions of the narrative accounts provided in the data, the candidate was able to check for confirmatory evidence or challenge interpretations, refine coding and arrive at a consensus on the major themes (Miles and Huberman, 1994).

A coding framework (Appendix 10) was developed (for both the focus group and interview data) within the thematic analysis and was checked for quality at the 'reviewing themes' stage by checking all themes against the data extracts to ensure relevant data were meaningfully captured. The data underwent repeated comparisons and review using the constant comparative technique through coding, re-coding and memo writing, to generate themes and concepts. This drew on recognised techniques including the scrutiny of deviant cases, checking for confirmatory or challenging evidence within the

dataset, and interpreting patterns (Miles and Huberman, 1994). Furthermore, this allowed the candidate to identify instances that didn't match the framework and determine whether and how to expand or merge thematic codes (axial coding) (all reviewed by a supervisor to improve reliability).

The findings were mapped to the i-PARIHS framework and iterative review and ongoing discussion between the candidate and ZP allowed for the refinement of themes and to achieve consensus. Any differences were resolved by discussion and data were shared and discussed with the research team and their feedback incorporated.

For the interview data, the candidate revisited the reviewing themes, defining and naming themes on several occasions following critical reflection on the data and considering new emerging factors and was considered in light of the i-PARIHS framework. This ensured that the themes were coherent and a true reflection of the meaning of the data.

Table 6 provides an overview of the six stages of thematic analysis used to analyse the transcripts of the focus group data and interview data.

Table 6 Overview of thematic analysis stages informed by Braun and Clarke (2006)

Stage of data analysis	Description
<i>Familiarisation</i>	Reading and re-reading the data (transcripts) and listening to the recordings to check for accuracy, establish familiarity and note down initial ideas. This stage enabled a deep and familiar sense of the semantic meanings of the data.
<i>Generating initial codes</i>	Coding interesting features of the data in a systematic way across the whole dataset. Codes were both semantic (descriptive) and latent (interpretative). All relevant segments of data, relevant to the research objective were coded. Data relevant to each code was collected and reviewed.
<i>Searching for themes</i>	Collating codes into potential broad themes and gathering all data relevant to each potential theme through several iterative stages to ensure the themes explained the data. A central organising concept (a core idea that underpins each theme and ensures that themes are coherent and distinctive) was identified for each theme.
<i>Reviewing themes</i>	<p>Checking the themes explain the data and amending or discarding themes as appropriate. A thematic map was produced to visualise the themes and any relationships between them. Themes were then checked against both extracts of data and the whole data set. Some codes were discarded, relocated or the thematic boundaries amended to ensure each theme meaningfully captured the data.</p> <p>Questions were used to guide the review process including: Is this a theme or just a code? What is the nature of the theme? What are the boundaries of the theme? Are there enough meaningful data to support this theme? Are the data too diverse and wide-ranging – does the theme lack coherence? Findings were mapped to the i-PARIHS framework to aid interpretation.</p>
<i>Defining and naming themes</i>	The ongoing analysis took place to refine aspects of themes and consider findings in light of the i-PARIHS framework to determine the overall story emerging from the analysis. An analytic narrative was produced to specify key features from each theme. The data were then organised within an overarching conceptual framework.
<i>Writing up results</i>	Detailed results were written up (Chapters 6 and 7) to develop real-life depictions of KM for OA in primary care. The analytic narrative was written and built around key data excerpts to describe the factors affecting the implementation of an intervention/innovation in primary care

5.7 Deriving and refining recommendations and developing a toolkit

5.7.1 Triangulation protocol

The aim of the triangulation protocol was to (i) integrate the findings generated from the empirical work of the thesis, (ii) ascertain the level of convergence from the findings identified, and (iii) inform Chapter 9 stakeholder engagement consensus exercise (objective 6).

Overview

A triangulation protocol involves the integration of data after all data sets have been individually analysed. Triangulation is a complex process to facilitate combining and synthesising data and to identify whether data agree (convergence), contradict (dissonance) or complement each other (Meijer et al., 2002). The different types of triangulation are outlined in Table 7.

Table 7 Types of triangulation (Denzin, 2017)

Type of triangulation	Description
Methodological	Involves multiple methods of data collection
Data	Involves multiple data sources
Theoretical	Involves the use of different theories to analyse and interpret the data
Investigator	Involves two or more researchers in the analysis and conclusions

Study design

This study used methodological triangulation, including three data collection techniques (systematic review, focus groups, and interviews); data source triangulation (data collected at different time points); and partial investigator triangulation (the analysis was undertaken by the candidate and lead supervisor ZP collaboratively). Theoretical triangulation was not applicable as all empirical research activities have been conducted from a pragmatic stance (see Chapter 1 for the philosophical position). The triangulation protocol also adopted a pragmatic approach (O’Cathain et al., 2010).

Triangulation procedure for data collection and analysis

Findings across all three data sets were compared using a modified triangulation protocol for qualitative research based on the principles of Farmer et al. (2006). This provided a structured approach to triangulation and helped to ensure the process was transparent and replicable. The approach adopted in this thesis differs to that of Farmer et al. (2006) in several ways. First, rather than a six-step process which separates the review of the coded findings between researchers as a distinct step, the study reported in this chapter combined this step within convergence coding, therefore conducting the same processes in a five-step protocol. Second, in contrast to Farmer et al. (2006), this study did not identify the frequency of key findings amongst each data set as ‘complete agreements’ were considered to provide sufficient evidence of data strength. Finally, rather than sorting data into similarly categorised segments or overarching themes, the decision was made in this study to sort individual key findings from each data set and not overarching themes, to mitigate the risk of losing the meaning

and nuances of the rich data within each data set. This enabled a detailed examination of the data throughout the process whereby the contextualised nature of each individual finding was maintained, and close attention was paid to each key finding throughout the process so that subtleties were not lost in the early stages by the themes being too broad. An overview of the steps followed is shown in Table 8.

Table 8 Triangulation protocol (adapted from Farmer et al, 2006)

Step	Activity
1. Sorting	Review of original data sets to identify key findings and supporting quotes
2. Convergence coding	Comparison of each key finding with the other data sets and identifying the level of agreement, dissonance or silence between them
3. Iterative checking	Examination of complete agreements and any dissonances and silences by going back to the original data sets and completing further analysis
4. Categorisation and typology development	Grouping findings into a typology. Refinement of key findings to develop the draft recommendations for step 5
5. Stakeholder review	Draft recommendations presented for stakeholder review to assess and measure the level of agreement with each recommendation and subsequent refinement of recommendations

Step 1. Sorting

The original data, interpretation, and reports of all analyses were examined and the key findings for each data set were identified. The key findings were presented as statements (to aid comparison and the translation of these into recommendations (step 2 and 4)) along with example quotes from the data initially by the candidate and refined through discussion with the qualitative supervisor (ZP) (Appendix 11). A 'key finding' was an individual finding within a data set that was reported in the results and was relevant to the research question. Where there was complete agreement across two or three data sets, the corresponding two (or three) key findings were treated as duplicates and reduced to one final list, meaning the total number of key findings reduced.

Step 2. Convergence coding

Each key finding from one of the three data sets was compared to every other key finding in the other two data sets to create a convergence coding matrix. This was an iterative process carried out by the candidate and ZP that involved revisiting the original data sets to gain a thorough understanding of the nature and context of the original quotes. The relationship between each key finding was marked as one of four categories: agreement, partial agreement, silence, and dissonance (Farmer et al., 2006). Agreement represents convergence in the data, partial agreement reflects similarity or complementarity between the data, dissonance reflects conflicting findings and silence reflects instances where only one data set out of the those being compared contained data on a finding. In some instances, the wording of the

corresponding key finding was modified, taking care to remain true to the original data. The matrix displayed the final overall statements on one page.

Step 3. Iterative checking

The remaining key findings were reviewed iteratively with the original data sets. Instances of complete agreement between all three datasets were examined to consider the strength of a finding. Further analysis was completed to examine and understand the dissonances (incongruent findings) and silences (a finding in one data set, not replicated in any other) identified in the convergence coding. Partial agreements were not examined critically due to repetition with previous data analysis. Each key finding was carefully considered with regards to the context of the finding and supporting quote, the explanations for these and reasons for potential differences and whether theory helped enhance understanding. This was also to identify if any findings were solely generated by one data set, individual participant or general practice and explore why. Close attention was paid to silences to decide if these were explained by the nature of the data and research questions for that specific data source or not. Variability in the content of data sets was anticipated due to the participants in the research and the focus, purpose and intended audience of the research.

Step 4. Categorisation and producing a typology

Findings were grouped into similar themes and developed into a typology. These were discussed with the whole supervisory research team (KD, AF, ZP) for sense checking, to obtain a consensus about the relationship between findings and to refine the typology. Again, the overall number of findings reduced through an iterative, combined approach with the whole study team

where it was decided that findings that were very similar in focus and meaning could be combined and refined. Care and attention were taken to ensure that the final finding statements (Appendix 12) remained true to the original data. The wording was then modified to develop the finding statements into draft recommendation statements for step 5, the stakeholder review. This was conducted considering the NICE methodology for developing recommendations (NICE, 2014a) to ensure that the recommendation statements were concise, unambiguous and easy to interpret by the intended audience. For example, each recommendation statement contained only one main action or variable to be voted upon.

Step 5. Stakeholder consensus exercise

All the recommendation statements were included in the stakeholder consensus exercise to allow stakeholders to vote on each recommendation derived from the data. The draft recommendations were presented at a National KM conference to evaluate the recommendation statements. The recommendation statements were then refined and finalised into a toolkit (in some instances this involved combining statements back together that had been separated for the purpose of voting). This step is reported in more detail in the following sections.

5.7.2 Stakeholder engagement consensus exercise

Overview

To address objective 7 of this thesis and inform the key recommendations to be included in the toolkit, a stakeholder engagement consensus exercise was undertaken. The aim of the stakeholder engagement consensus exercise was to get stakeholders to rate and vote on the importance of the draft recommendation statements using consensus methods, and to refine the draft recommendations in order to develop a toolkit to optimise KM for OA in primary care.

Consensus methods

Formal consensus methods are used to make the best use of available knowledge in areas of health research such as guideline development and identifying priority areas (Murphy, 1998). Consensus methods do not create new knowledge, however, one advantage of obtaining a group decision is the range of knowledge and experience that contributes to decision making. Several issues that require careful consideration include participant selection, cost and time implications, and the fact that a majority vote may not be unanimous (Murphy, 1998).

The three commonly used methods to develop consensus are the Delphi technique, the nominal group technique (NGT) and the consensus conference (Murphy, 1998). The former two methods use explicit (usually statistical) methods to combine decisions, but they differ in the way consensus is sought. The Delphi technique has no geographical constraints as participants do not meet but are asked individually to rate the options over several rounds, either by post or by email. However, there is a risk of participant fatigue with the

Delphi technique and participants may fail to complete later rounds (Fink et al., 1984). In the NGT, participants rate the options individually first, and then take part in a highly structured discussion, usually over two rounds (Jones and Hunter, 1995). The challenges with this approach are the need to generate useful information within the time constraints of the meeting, and the need for a skilled facilitator to manage the group discussion and output. The consensus conference differs from the Delphi technique and NGT in that agreement is sought using less complex methods, such as a majority vote. The evidence is presented by an individual, who is not part of the decision-making group, and is followed by a chaired discussion where participants can ask questions. All methods can include experts, however, the conference consensus was originally designed for use in public meetings to make decisions (Nielsen et al., 2006). Expert participants are often representative of a professional discipline, the intended users of the results, or those who have the power to implement the results.

Another factor for consideration when deciding on the most appropriate consensus methodology for this thesis was the way in which digital methods contribute to healthcare transformation (Percheski and Hargittai, 2011, Agarwal et al., 2010). Traditional consensus methods can be undertaken in more innovative ways that may bring added benefits and facilitate the process as part of the digital age.

Context

The Impact Accelerator Unit, in the Research Institute for Primary Care and Health Sciences, Keele University, co-hosted a national KM event on 7th November 2018 in collaboration with the University of the West of England,

Bristol. The event, entitled Commissioning Evidence-Based Musculoskeletal Services (which took place in Birmingham, UK), aimed to consider the best ways of implementing research findings in musculoskeletal healthcare delivery and brought together primary care stakeholders including managers, practitioners, commissioners, and lay representatives to improve understanding of the practicalities and obstacles relating to implementation in primary care. This event provided the opportunity to present the draft recommendations from this thesis and use the findings from the consensus exercise to refine the recommendations, which could be incorporated in a toolkit.

A toolkit has been defined as '*a packaged grouping of multiple KM tools and strategies that codify explicit knowledge and are used to educate and/or facilitate behaviour change*' (Barac et al., 2014) and is one type of multifaceted KM strategy that offers simplicity and flexibility in use (Yamada et al., 2015). Many toolkits in healthcare exist for stakeholders to use at their own discretion according to their aims, resources, and context (Ramage et al., 2017, Foundation, 2015, Yamada et al., 2015).

Consensus method appropriate to this thesis

In the interest of time, it was not possible to conduct multiple rounds of a Delphi method, nor was it practical or appropriate to ask conference attendees to spend half a day completing an NGT. Stakeholder agreement voting is used in other areas, for example by the European League Against Rheumatism (EULAR), to develop recommendations (van der Heijde et al., 2015). Therefore, conference consensus methods using digital voting technology to obtain levels of stakeholder agreement was selected as an

appropriate method for the consensus exercise in this thesis. The approach provided the opportunity to capture a higher number of stakeholder opinions, without the risks of participant drop-out, and that combined empirical data with tacit knowledge, experience and opinion of key stakeholders to produce a useful output. Whilst international expertise was less likely to be captured, this was a timely and economical way of achieving consensus that was relevant to musculoskeletal health in the NHS primary care setting, efficiently in a reasonable amount of time.

Study Design

A conference consensus exercise using digital voting technology was undertaken to ask stakeholders to rate and vote on the importance of the recommendation statements to better understand if the recommendations were acceptable and relevant to stakeholders and to provide a sense of face validity. The conference consensus was conducted in two rounds at the conference event. The first round was to determine the level of agreement of key stakeholders with the recommendation statements as advocated in other literature regarding the development of recommendations (van der Heijde et al., 2015). The second round focused on identifying priority areas and offered the ability to unpick which of the recommendations from each of the six domains of the typology⁷ (developed in the triangulation exercise, Chapter 8) were more important to stakeholders. This would be beneficial should the instance arise whereby participants voted in a similar way for a large number of recommendation statements within each typology group in round one. The

⁷ For an overview of the typology see Chapter 8 page 340

two rounds were mutually exclusive. Written and verbal comments from the event were also collated.

The consensus exercise used TurningPoint interactive polling software (TurningPoint version 5 www.turningtechnologies.com) via Microsoft PowerPoint (2010). This is a response system that allows the audience to respond to interactive questions using a hand-held keypad, known as a Response Card™. This interactive software allows real-time data collection, providing instant feedback to the audience. Individual responses were anonymous.

Sampling and recruitment

Key stakeholder participants were delegates at the national KM event. Delegates included a range of primary care stakeholders including but not limited to researchers, commissioners, managers, practitioners and lay representatives, from a range of CCGs across England. The expertise for this group was that of providing, delivering, commissioning or accessing services in primary care, musculoskeletal health, and/or KM and implementation.

All delegates at the event were invited to participate in the stakeholder engagement consensus exercise. A brief summary of the stakeholder engagement consensus exercise (Appendix 13) was emailed to delegates by the event organiser along with the finalised programme and information for the day, approximately seven days prior to the event. Hard copies of the stakeholder engagement consensus exercise information were included in every delegates' welcome pack on the day (Appendix 14). At the start of the event, the candidate gave a brief presentation to delegates providing

information about the stakeholder engagement consensus exercise (Appendix 15).

Consent and confidentiality

The candidate emphasised that participation was optional to try and minimise the risk of participants feeling pressurised. Voluntary consent was also emphasised to delegates in the consensus exercise information sheet (Appendix 14). Participants could withdraw from the second session by not partaking in the digital voting, however, it was stressed to delegates (in the presentation and on the information sheet) that once data has been entered and collected it could not be deleted. The consensus exercise was anonymous and no personal details of any of the respondents were collected.

Data collection

From the triangulation data, 30 recommendation statements were identified. The following additional statement was added to the consensus exercise recommendation statements.

When implementing in primary care, offer knowledge mobilisation strategies that are grounded in a theoretical approach.

The additional statement was not derived from the data but felt by the candidate to be potentially important considering the literature in the field. Therefore, 31 recommendation statements were included in the consensus exercise. The statements are listed in Appendix 12.

After ensuring that delegates were familiar with the information sheet and details of the study, the TurningPoint voting handsets were handed out to

potential participants. Each of the recommendation statements was read out and displayed visually on a large screen and a series of options for voting were given. In the first session, participants were asked to select their level of agreement with the statements using a 7-point Likert scale (Komorita, 1963). The Likert categories were strongly agree, agree, somewhat agree, neutral, somewhat disagree, disagree, strongly disagree.

In the second session, participants were asked to rank, in order of importance the priority recommendations within the six typology groups. For one typology group 'the knowledge mobiliser role', two priority votes were conducted. One for the recommendation statements relating to the characteristics of the knowledge mobiliser, and one relating more specifically to the role. Finally, an overall priority vote was sought on the most important typology group. Therefore, in total, eight areas were presented and voted on.

Results were displayed visually immediately after each voting round had closed. Participants were also invited to post any comments, questions or concerns anonymously in a box at the event or discuss verbally with the study team. These comments (n=8) were collated by the candidate. Demographic details of participants were not collected.

Data analysis

Responses to the digital voting exercise were collected via TurningPoint handsets and imported into Microsoft Excel (2010). Bar charts representing response data were generated in Excel and the findings were tabulated and summarised both narratively and using descriptive statistics.

Level of agreement

It was decided *a priori* that all recommendation statements would be included in the toolkit but presented with varying degrees of strength of recommendation as indicated by stakeholder voting. This was because all recommendation statements were derived from the data and hence had empirical evidence to support their usefulness in the context in which the data were collected. As a result of the voting, each recommendation statement could either be included in the toolkit without any changes, or reworded. The wording of the final recommendation statements was carefully considered as this is an important element of developing recommendation statements. The choice of wording was informed by NICE and EULAR methodology (NICE, 2014a, van der Heijde et al., 2015), whereby recommendation statements that obtained higher levels of agreement would be presented in the toolkit as 'action' statements, and those with lesser agreement levels presented as 'consider' statements.

The level of agreement used to define consensus is often arbitrary with no definitive guidance whether to 'set the bar' at the level of the majority or higher (Murphy, 1998). The criterion was informed by the aim and desired output of this study: to produce a toolkit that is relevant and useable for key stakeholders involved in KM in musculoskeletal primary care. Whilst it was important to carefully consider any outliers, it was also necessary to define the cut off points for the 'action' and 'consider' statements. The cut-off point for 'action' statements was set at 75% to reflect a majority agreement. Comments and results of the priority voting were used to inform decisions about the wording of the final statements for inclusion in the toolkit. For

recommendation statements obtaining a level of agreement below 75%, discussion took place with the study team and informed by any participant feedback and the priority voting, to decide on the justification for and rewording of the statement.

5.8 Patient and Public Involvement and Engagement

Keele University has a national and international reputation for good practice in PPIE. The Research Institute (RI) where this study took place has supported a successful Research User Group (RUG) for a number of years (Jinks et al., 2016), celebrating 10 years of achievement in 2016 (SPCR, 2016). In addition, the RI hosts a Lay Involvement in Knowledge Mobilisation (LINK) Group which enables and supports meaningful PPIE in the implementation of research evidence into real life healthcare practice⁸. One of the key features of PPIE at the RI is its sustainability and impact throughout each element of the research cycle and beyond involvement in time-limited research projects (Jinks et al., 2016).

The initial aim of PPIE in this thesis was to provide a sense check to the candidate to ensure that the research was focussed on pertinent issues and that study materials were appropriate. Plans for PPIE involvement throughout the study were discussed with and shaped by the PPIE group to ensure that the patient perspective was embedded throughout the thesis. Both the RUG and the LINK group have been involved in the work described in this thesis. PPIE involvement and contributions to the thesis are shown in Figure 14.

⁸ For further details of the LINK group see thesis glossary

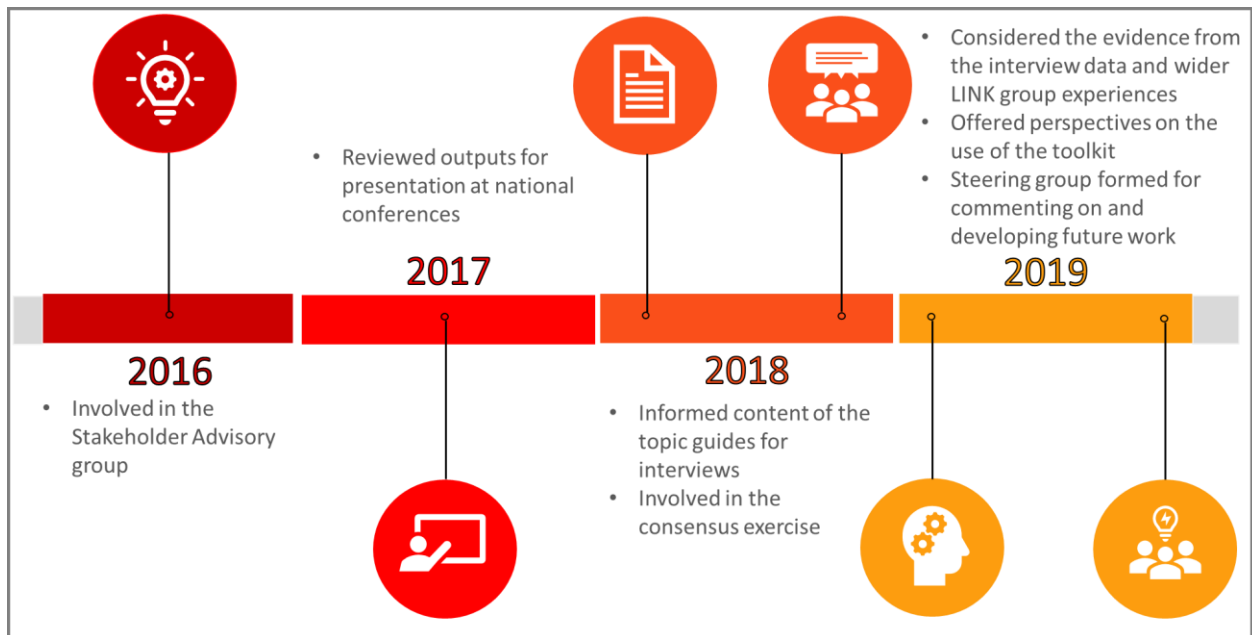


Figure 14 Patient and Public Involvement and Engagement in this thesis

In addition to PPIE involvement in the stakeholder advisory group (Chapter 3) and stakeholder engagement consensus exercise (Chapter 9), four additional meetings were convened. These are described below.

- 27th June 2017 – discussion of the thesis to date and abstract submitted to Health Services Research UK (HSRUK) Conference and the UK Knowledge Mobilisation Forum. Planning and design of poster presentation for HSRUK and creative ways to incorporate findings for an interactive poster session at the KM forum whereby the theme was an ‘unconferency conference’.
- 29th January 2018 – a discussion of key findings from the thesis and consideration of topic guides for individual interviews.
- 31st January 2019 – LINK group meeting to aid interpretation of interview results and discuss the wider experiences of becoming a LINK group member. Discussion focussed on the role of PPIE in the IAU and for KM more broadly, and the impact of PPIE in decision making.

- 20th February 2019 – a discussion on the ongoing use and development of the toolkit, including suitable audiences. In addition, three members formed a steering group and have commented on and started developing the next stages of the candidates' work.

The outcome of the meetings relating to the design, conduct and analysis of the semi-structured interviews is reported in Chapter 7. Detail relating to discussions on the future use of the toolkit and the next stages of the candidate's work are reported in Chapter 10.

5.9 Ethical considerations

5.9.1 Approvals

The focus group study was approved by a Research Ethics Committee, as part of the Managing Osteoarthritis in Consultations (MOSAICS) Trial (REC reference: 10/H1017/76). Approvals for secondary analysis of the data were obtained from a university ethical committee (reference: ERP1329) and an internal data request from Keele University (Appendix 16).

The interview study was reviewed and given a favourable opinion by Keele University's Ethical Review Panel (Reference: ERP 1329) (Sponsor RG Code: RG-0055-16-IPCHS) and by the Health Regulatory Authority (IRAS ID: 218034) (to interview NHS staff) (Appendix 17).

The stakeholder engagement consensus exercise was reviewed and given a favourable opinion by Keele University's Ethical Review Panel (Reference: ERP 2408) (Appendix 18).

5.9.2 Recruitment

Following the research ethics committee review, some changes were made in light of the comments. Changes were made to the wording of the study documents for the interview study to reflect the risk of coercion to take part by nature of the snowball sampling whereby there was the potential for peers, colleagues and/or managers to identify individuals whom they work with to participate in the study. This was reflected accordingly and then taken forward to the consensus exercise as there was also a risk of coercion at this event as potential participants were attendees at a national event.

Great care was taken to ensure that the method of recruitment did not lead to potential participants feeling pressured to take part. For example, in the interview study the following steps were taken: (i) emphasised voluntary consent at all stages of the process and that participants are able to withdraw at any time, (ii) stressed that there would be no effect to professional role or participation in future research studies (run by IPCHS) should the potential participant choose not to take part in this study, (iii) Contact of potential participants would be made by the researcher and not the current participants, and (iv) current participants' details would not be disclosed to potential participants.

In the stakeholder engagement consensus exercise, it was stressed by the candidate that delegates were under no obligation to take part or provide responses on any topics which may make them feel uncomfortable.

5.9.3 Sampling

During the interview data collection and analysis, it became apparent that the data may benefit from further interviews with individuals with a more clinical focus, a knowledge broker who may have been less successful in bringing about change, and a clinician who could discuss the sustainability element of KM for implementation. In view of this, the list of potential participants that had been provided in the snowball sampling was reviewed and refined purposively to ensure sufficient breadth of experiences within the clinical context, using the concept of data saturation. The original ethics application stated approximately 12 interviews required. Considering this and the grounds within the existing ethical approvals to approach these individuals, an ethical amendment for two further interviews was not

required. The interview schedule was adapted and refined to reflect the change in focus.

5.9.4 Consent and withdrawal

For the consensus exercise application, the ethics committee expressed concerns relating to obtaining explicit consent from conference attendees. The committee requested that explicit consent was obtained using a consent form, to ensure that consent for voting answers to be used was not presumed. Given the nature of the event and that personal details of participants were not required for the study, a clear justification for not obtaining written consent and participant information was provided in response to the ethics committee concerns. It was clearly stated on the information sheet and in the verbal introduction that the consensus exercise was anonymous, no personal details were collected, and consent was given by participating in the exercise. It was also made clear (in writing and verbally) that partaking in the anonymous consensus exercise meant that delegates' responses would be used in the project. Delegates not wishing to take part in the study were advised not to vote. Participants could decide to withdraw from the second session by not partaking in the second consensus exercise. It was stressed to delegates that once data has been entered and collected it was not possible to delete their anonymised data.

5.9.5 Change to method during data collection

Following the original ethics application, a minor change to the study documentation was deemed necessary to reflect the issues discussed previously (section 5.3 methodological considerations). The candidate

relinquished the idea of conducting a case study as this was poorly supported and hence not appropriate for the study (Morse et al., 2002). Despite the data collection methods not changing, a minor amendment was submitted to the ethics committee to ensure that study documentation did not describe the work as a case study. This was approved by the committee on 5th November 2018 (Appendix 19).

5.10 Reflexivity

A positionality statement was written by the candidate at the start of the study which was reflected upon throughout the study. Throughout data collection and analysis an audit trail was completed as advocated by Pope et al. (2000). The candidate maintained a log and electronic codebook of emerging thematic codes, their definition, and sample data illustrating the application of the code. In addition, a reflexive diary was kept, noting any ideas or questions that may inform interpretations, subsequent interviews or the final analysis. The completion of a placement at the University of West England, Bristol, funded by the NIHR Short Placement Award for Research Collaboration (SPARC) award provided the candidate with a valuable opportunity for further reflection on the study. The purpose of the reflexive diary was not to be judgemental about decision making but to reflect on past experiences and identify lessons learnt to inform the thesis and future work.

Reflecting on the data collection and analysis process, it was important for the candidate to take an objective stance as her role as a staff member in the JIGSAW team and as a Ph.D. candidate researching the project had the potential to affect the interpretation of results and her interactions in JIGSAW project meetings. The candidate did not disclose her professional clinical role during data collection but may have been known to some of the potential participants. During the data collection period for the interview study, the candidate attended several national and international meetings as part of the JIGSAW team. It is important to recognise that this exposure to the culture, processes, mindsets, and orientation of the work within the institution and further afield created an extra 'layer' of knowledge and understanding in the

area. Care was therefore taken to remain true to the data and ensure that implicit understandings and interpretations were not intertwined within the analysis.

The role of the candidate within the JIGSAW team may have resulted in participants agreeing to be part of the research for alternative reasons (for example, the link with an internationally recognised research team, led by Principal Investigator (KD) or a subconscious recognition of the underlying MOSAICS research). The motivations of participants and the way in which they perceived the candidate may have influenced how they engaged with the research. For example, they may not have been open with the candidate about criticisms of the MOSAICS research study. However, evidence within the data suggests that they were not inhibited.

The candidate was exposed to the drive and strategic planning of the RI to implement research projects in primary care. Early on in the process, the candidate had significantly less awareness and understanding regarding the role of Clinical Commissioning Groups (CCGs) in KM and implementation of research. This developed over the course of the research and as part of the NIHR SPARC Award, subsequently influencing data collection and analysis. In addition, interviewing and interacting with stakeholders who are not linked to the RI provided additional insights as to how KM 'fits' with non-academic structures.

Further issues regarding the reflexivity of findings are discussed in more detail in Chapter 7.

5.11 Chapter summary

This chapter has presented the detailed methods adopted in this thesis and has outlined the justification and selection of an underpinning theoretical approach relevant to this thesis. The ethical considerations that were considered throughout the study have been described along with PPIE for the thesis and candidate reflexivity. The following chapter reports the analysis of previously conducted focus groups investigating KM at the transition between a research trial and real-world implementation.

Chapter 6: Investigating the transition from a research trial into the real world: analysis of focus group data

6.1 Introduction

Chapter 4 presented the conduct and findings from a systematic review and thematic synthesis exploring the factors that influence the implementation of evidence-based guidelines for OA in primary care. One of the main findings related to the disconnect between research and the real world and how traditionally, research and implementation have been viewed as separate entities. One way of examining this was to investigate the adoption of an innovation in the transition period following a research study.

This chapter presents the results of focus groups conducted with general practices from the control arm of the MOSAICS study who had received a training package on the intervention at the end of the trial. This chapter aims to understand and explain the KM process at the transition between completion of a research trial and 'real world' implementation in clinical practice. Specifically, the study sought to understand KM at an organisational level, and how new knowledge from a post-trial training package was used to inform decisions for implementation in general practice.

A brief overview of the methods and context for this chapter is firstly described. This is followed by a detailed account of the results of data analysis, a discussion to situate the findings within the context of wider literature and theory and the chapter conclusions.

6.2 Overview of methods and context

A detailed account of the study methods is presented in Chapter 5 (section 5.6). The focus groups were conducted in 2013 by supervisor ZP, a peripheral member of the MOSAICS research team. The original aim was to (i) investigate how the delivery of a training package post-trial prompted and enabled changes in care for patients with OA in the control practices of the MOSAICS trial, and (ii) understand to what extent a group discussion contributes to thinking about changes in practice. A very brief analysis was conducted at the time of the study to inform further iterations of the training package and this was included in the funder's (NIHR) report (Hay et al., 2018).

A secondary analysis of the focus group data, reported in this chapter, was conducted by the candidate. The aim of this study was to evaluate KM activity to share practice-based learning and understand early adoption from a research trial. Following the conduct of the focus groups, one of the practices involved in this process went on to be the catalyst for the JIGSAW implementation project. The training package that was delivered to the control group practices has been scaled up more widely and has now gone on to be delivered as part of JIGSAW, both nationally and internationally.

6.3 Results

Three of the four control practices agreed to participate in the focus groups. The practices were a mix of rural and urban and varied in size (in terms of the patient populace). Most of the 21 participants were GPs (n=13), with six practice nurses, one healthcare support worker, and one trainee GP also

taking part. There were between five and eight participants in each group. Table 9 shows the characteristics of the general practices and the participants that took part in the facilitated focus group discussions.

Table 9 Characteristics of the focus group practices and participants

	Practice 1	Practice 2	Practice 3
Patient populace ⁹	9000	11,000	8000
Rural or urban	Rural	Urban	Rural
Number of participants in the focus group	8	8	5
Gender	Male n=4 Female n=4	Male n=4 Female n=4	Male n=2 Female n=3
Profession ¹⁰	GP n=5 Practice nurse n=2 Trainee GP n=1	GP n=5 Practice nurse n=2 Healthcare support worker n=1	GP n=3 Practice nurse n=2

⁹ Rounded to nearest thousand

¹⁰ Not described by gender to preserve anonymity

Two overarching themes were identified: the *key determinants of implementation* and *from knowing to doing*. These two overarching themes are discussed below in more detail, including sub-themes and supporting quotes.

6.3.1 Key determinants of implementation

Whole practice approach to training

The whole practice approach to training was described as 'unique' with participants reflecting on the usual lack of time and opportunity to attend training sessions with their colleagues. This reflected the social norms amongst each practice group and highlighted how rarely primary care practitioners meet to discuss EBP or implementation of research.

The whole project has been great. It has brought us together on a number of occasions. But often one of us will learn something and then, keep it to yourself and you don't actually get to, to talk to your partners about it. So, as you all do it at the same time, it's kind of, unique really, isn't it? We don't do that very often...it's been great you guys coming to talk to us [P3GP1]

Whole team inclusion was perceived as a particularly valuable feature of the training package and the inter-professional learning facilitated KM. The open culture for learning created by the training enhanced the capacity of each general practice to make changes to their clinical practice. The training allowed a cohesive message to be developed across the practices to ensure that all practitioners were delivering the same information to patients with OA.

I think the importance of the training for me is that we have the same shared concept of what we're doing [P1GP1]

In addition, the whole practice approach enabled participants to co-produce action plans for the next steps of implementation within each practice focus group discussion.

Opportunity for feedback and reflection

Participants indicated that feedback and reflection at several time points over the course of the training facilitated a change in practice. The external knowledge, presented within the training package, was considered and reflected upon at multiple levels, from individuals to the practice groups. Participants described the different ways in which this knowledge was combined with their existing knowledge about the management of OA. Firstly, within the training workshops, participants described the group work as a valuable opportunity to learn from colleagues and gain immediate feedback on their current practice. Despite most participants describing an element of reservation regarding role play with simulated patients, this component of the training emerged as being a key feature and arguably the most beneficial. With regards to the opportunity to practice what to say and how to say it, one participant noted that:

What I found most interesting was hearing the other doctors' descriptions of how they put things across to the patients. Because we all did it slightly differently but we all did it in the same way if you know what I mean. We're getting the same message across, but we use different ways of explaining it. And nearly everybody who was sat around went, 'Oh, that's a neatish way of putting it,' you know, on

various issues. And you think, 'Oh yeah, I've never thought of putting it that way before.' I found that was the most useful point actually
[P1GP1]

Secondly, an important, beneficial element of the training was the sessional nature staged over three weeks. This allowed for feedback and reflection at an individual and group level. Furthermore, participants were able to reflect on practice-based experience which reinforced how using the new knowledge provided demonstrable benefits to patients. Those who described instances of utilising the knowledge and skills from the workshops in clinical practice expressed satisfaction about the positive responses they have received from patients returning to follow up appointments.

I've had a couple that have come back to me and said, 'Well, actually, the pain isn't as bad as I thought it was going to be.' And, you know, it's encouraged them to carry on and, and carry on with the exercises. They are walking longer distances. So, they are building up their knee strength and noticing that it isn't as painful [P1PN2]

Finally, the 'in practice' reflection that took place during the focus group discussion was pivotal in optimising the mobilisation of knowledge and enabling practices to action-plan the next steps for implementation. This is discussed in more detail later in this chapter, under the sub-heading *clinical academic collaboration*.

Identifying a previously unrecognised and unmet need

One unanticipated finding was that the perceptions of OA initially appeared to be a barrier to implementation but during the KM process became an

enabler as participants developed favourable opinions and attitudes towards the intervention. A shift in the perceptions of the management of OA over the course of the training emerged as a powerful enabler to implementation. The participants described how they were able to interpret the knowledge from the training in relation to current practice and make changes accordingly. Participants felt that the training targeted an area of patient management which was previously an unrecognised problem; the perception (by professionals and patients) that very little could be done about OA, that 'they've just got to accept', and the assumption that it will worsen over time.

An awful lot of patients come in with OA and some of them will actually say 'I'm going to be in a wheelchair in five years' time, aren't I, doctor?

[P1GP2]

Participants used personal evidence, based on anecdotes to support their views on perceived patient perceptions of how exercise will 'do more damage'. It was widely recognised that OA is viewed as a low priority with '*nothing that can be done about it*' by both HCPs and patients. The training highlighted a blind spot in the management of OA and provided staff with new knowledge and skills. The participants described how they reflected critically on their practice in light of the new evidence and this shifted their attitudes and beliefs towards their management of OA.

This process was seen to facilitate obtaining stakeholder buy-in, by getting staff on board with the research knowledge and subsequent intervention. A key feature of the change in practice was the ability to give patients 'a positive message' about OA. Most participants reflected on how they were better able to manage patients with OA following the training due to a more

comprehensive understanding of the evidence-base supporting the advice provided as part of the OA consultation.

The 'fit' of the intervention with existing systems

Flexibility was a key feature of the intervention that enabled it to be delivered in more than one way and to fit with existing systems at an organisational level. Each practice implemented the intervention in a way that local contextual circumstances allowed as they were not bound by trial conditions. This meant that internal structures and processes were not affected when the new knowledge was used in practice.

The alignment between the intervention and a pre-existing agenda to broaden the scope of non-medical roles was identified. Practice nurses and the healthcare support worker discussed the reconceptualisation of their role in implementing the intervention. Given the reported restricted availability of physiotherapy, the focus group led each practice to consider alternative ways of delivering the enhanced OA consultation. Each of the three practices considered slightly different approaches and professional groups for implementation and delivery, all of which aimed to reduce the workload of general practitioners and were specific to each practice context. The possibility of expanding the roles of practice nurses and healthcare support workers was welcomed as participants recognised the need for opportunistic prevention of OA and managing co-morbidities during consultations. A surprise finding was the way in which primary care teams felt that not only healthcare support workers but other team members such as receptionists may be best placed to deliver and monitor interventions for OA.

It need not be the GP that then takes that forward, I suppose, with trained nurses or train somebody else [P3GP1]

We've got a new secretary coming...one of the two secretaries is a lady who has done ... some sort of fitness programme or something like that... So, there are quite a lot of people are interested [P3GP1]

The ease of implementability was another central enabling feature of the intervention because i) no structural change was required, ii) no change in consultation times was required, and iii) practice nurses were seeing people with joint pain when they attended clinical consultations for other conditions such as diabetes.

One participant described the challenges of implementing research interventions in primary care, suggesting that interventions need to be 'simple to use', with staff being able to find 'the best ways of doing things quickly'. Participants identified several ways in which the enhanced OA consultation maximised the potential for uptake by complimenting existing workflow processes. In addition, they were able to cite cases of positive examples and illustrate how they had used what they had learnt from the training sessions immediately as it was uncomplicated.

The alignment of the intervention with current policy

Whilst it was recognised that the intervention was not related to the QOF and associated incentives, the focus group attendees identified how the intervention was relevant to several prominent issues in healthcare policy. For example, the management of LTCs and multi-morbidity, the self-management agenda, and patient centeredness. Participants described how

these factors are integrated cornerstones in the management of other LTCs but lacking in OA. Subsequently, participants revealed how they conceptualised the training. The data capture examples of how the knowledge gleaned informed participants' viewpoints and enhanced a holistic approach which is positive, proactive, and applicable to a wider group of patients.

If people can take ownership of how to improve a problem themselves, it's the way we should be going [P3PN2]

It is a very different approach, isn't it, to the, 'You've got a sore knee - ask for an orthopaedic opinion,' which is the surgical model. And the training has been very much a primary care management model, which is much more appropriate, and I think that's been very helpful [P1GP2]

The intervention was highly valued due to the perceived benefits to the management of other LTCs. The skills developed during the training were seen to be highly transferable to other areas of clinical practice. Participants described how they felt more able to ask patients questions regarding weight management and exercise, as they felt equipped to manage patient responses. For example, by utilising skills developed in the training in patient consultations, including goal setting, managing (what they perceived to be) 'blocking' or challenging patients, and encouraging behaviour change. The benefits of being able to manage the more challenging patients was noted by one participant:

They showed us how to get around these blocking signals that the patients send out, and that's been really useful because I've used it in other respects as well [P1PN2]

6.3.2 From knowing to doing

Alternative drivers for implementation

The intervention was inadvertently perceived to address unmet needs which became alternative motivators for implementation in all three practices. One practice was identified as a financial outlier in the region due to 'high referrals rates in orthopaedics' which appeared to be a driver for change. Similarly, participants described the need and desire to reduce referrals to x-ray and secondary care, which they believed could be achieved by implementing the intervention. One participant suggested that implementing the new approach would 'reduce consultations' (with orthopaedic surgeons) and participants in that focus group agreed that a positive financial impact may occur as a result of implementation.

It's going to reduce – I think it'll reduce consultations (to secondary care) ... it does reduce your other requirements [P3PN2]

If I can argue it will save some referrals into secondary care, then we might be able to get the funding for it [P3GP1]

Practice culture and attitudes towards implementing new ways of working

The data showed how each practice responded to the training and encompassed a range of evidence to facilitate organisational change. The capacity of each practice to use the knowledge acquired from the training was complemented by a 'can do' attitude. In addition, little evidence of professional hierarchy was seen within data, whereby practice nurses were central to driving decision making. The discussions identified how all participants contributed to considering and implementing the intervention.

A change in practice was described at the level of the professionals following the training and subsequently moving forwards into implementation. The enthusiasm and motivation referred to by certain professionals contributed towards driving change and was described by one GP as 'fantastic'. The following quotation illustrates the importance of a sense of ownership and the characteristics of practitioners involved in KM, including their attitudes to change and believing in the intervention, in optimising implementation.

My concern is that the individual has to have the enthusiasm and the passion for the subject and then, so if somebody's really interested in taking this forward, then it's really gonna work. And if it just becomes another thing that everyone's got to do, it isn't gonna work [P3GP3]

Maintaining the 'balance' within a general practice

One factor that appeared to be a key consideration for whether a practice would implement the intervention related to the likelihood of the intervention creating more work within the practice at the expense of other conditions and hence disrupting the balance within the practice.

One GP participant was identified as a deviant case as they disagreed with the other participants in the focus group, providing a negative opinion regarding the emphasis of the training. This is shown in the following quotes which illuminate some of the issues relating to prioritising workload in general practice.

The only issue I had with, with all of that, outside of it is the proportionality of it all. You know, obviously, you're focused on this. I mean, you're a rheumatologist and you're focused on osteoarthritis,

as well. We're, we're, we're not focused and, and shouldn't be focused. And it's one of the issues I have with the whole, the way medicine's going at the moment, in general - so don't get me started -but, but one has to look at, erm, you have to look at the, er, keeping everything balanced, because we, we're only, we're human and we can only do a certain amount, and when you've got to keep 150,000 balls in the air
[P2GP1]

It's difficult to put it in proportion, I think. You can always improve people's care, but you can't do it endlessly because you've got, you've got other things too, er, it's general practice, not target practice
[P2GP1]

Although this participant did speak favourably about the intervention, this quote highlights the pressures faced in general practice and how equipoise is an important consideration in each practice.

Interestingly, one participant appeared to be daunted by the prospect and potential scale of implementing the intervention. This was mainly due to the size of the problem associated with OA which was described as having the ability to '*totally swamp the system*'. The focus group interaction enabled the other participants to respond to their colleagues' concerns and challenge them by considering system change and smarter ways of working to implement the intervention:

Because we would do it better doesn't mean to say we're gonna get that much more of it [P3GP1]

The discussion resulted in agreement amongst participants and all practices concluded that implementing the knowledge delivered on the training was straightforward and opportunistic as staff recognised that people with OA are typically attending appointments for other conditions. In addition, the participants perceived that using practice nurse time to treat OA would not negatively impact on practice resources and that implementation of the intervention was a more optimal approach to clinical consultations and would enhance existing practice rather than increasing workload.

It's useful - it actually gives you ways of approaching other things, you know, it doesn't only help the patient with osteoarthritis, but it may well help patients with all sorts of chronic diseases, and how important that is in general practice? [P1GP2]

Clinical academic collaboration

Participants identified several beneficial elements from their collaboration with the academic institution, including benefits of the training and the research presented by the MOSAICS team as part of the training.

The stuff from Keele, gave us permission and for me it validated - I found that the research, the graphs they put up that showed very useful...to me, it seemed to be that there's a different potential and a different narrative now. And, that's endorsed by the research we've been given. It just seems a better approach all round...what I hadn't got was the knowledge that what I was saying was actually evidenced based...that was a big endorsement. I found it very helpful [P1GP2]

It was not only the formal research evidence that had been packaged and presented by the research team, but evidence about patient experience, cost, and tacit knowledge held by clinicians and managers that unlocked the potential for implementation to occur.

One practice suggested that ongoing discussions regarding implementation may not have occurred in the absence of collaboration.

Would you have had this sort of discussion where you'd have sat down and shared the training if I hadn't have come today? [Focus group facilitator]

We should have done but I don't know that we would have done [P3PN1]

It's actually really helpful having an external person in, to kind of, guide us through it and make us think about it in perhaps a different way. So, I think, I think we've probably done it better than we would have done...definitely [P3GP1]

The focus group discussions were an important part of, and a vehicle for, KM which firstly, provided the space for participants to realise why the intervention was beneficial, secondly, harnessed participants' buy-in to the intervention, and finally, enabled participants to explore intentions to further change and prompt actions moving forwards. The focus groups facilitated discussions about operationalising the intervention and co-producing action plans for 'the next steps' in implementation for each practice. The social interaction and 'group think' appeared to consolidate the whole practice approach. Considering local contextual issues within a whole practice

discussion enabled practices to develop implementation action plans, thus shifting them from knowing to doing. The following quotes illustrate the planning in action by one practice during the focus group.

Do you think it would be helpful as a reminder to include that on the slips that we have? I mean I don't know if other people use them, but I use them all the time because I find that slip really helpful to see who does what and - and that you can hand it to the patient and if you can - because sometimes if you just say to the patient, 'Oh, go back to the front desk and book an appointment,' they don't - if it's busy they don't always do that. But if they've got a slip of paper in their hand, you know, then I think they can go back to reception and could then make an appointment. So maybe that would be a good way of prompting the doctors to refer to us [P1PN1]

I can see it fitting in place with a little bit of education, a little bit of exercise from me in that consultation saying like, 'In two to three weeks' time I want you to come and see (practice nurse names) to have a bit of follow up just to make sure you're doing the exercises correctly and err and they'll just go through a few other things that you can be maybe doing as a, as the next step.' That could work quite well really [P1GP1]

(practice nurse name) and I can have a look at the big pull-out sheet and see if we can section the exercises up and put them on docman...we communicate with the doctors using patient-connected tasks. I mean we could let you know; we could inform the doctors that way, feedback that way if they wanted us to [P1PN1]

Furthermore, the dynamic sharing of ideas within and between practitioners from different professional groups enabled discussions about the practical aspects of implementing the enhanced OA consultation within each general practice. This interaction was a core element of the process, with participants taking the opportunity to obtain feedback from the group on ideas for change. The social interaction and 'group think' appeared to be a central feature consolidating the whole practice approach.

6.4 Discussion

6.4.1 Summary of results

This chapter provides insight into KM at the transition between completion of a research trial and implementation in the 'real world' and identifies how new knowledge from a training package was used to inform decisions for planning implementation in general practice. The main findings of this work relate to understanding the set of circumstances around what happened as a result of discussions with the control group practices, how knowledge was mobilised at an organisational level post-trial and how this had the potential to optimise implementation.

The key determinants of implementation were a whole practice approach to training, the opportunity for reflection and feedback, identifying an unmet need, the 'fit' of the intervention with existing systems, and the alignment of the intervention with current policy. The whole practice approach to training and education overcame traditional organisational behaviours and social norms by providing shared CPD and opportunity for discussion. Providing a protected space for the whole practice to discuss and reflect outside of the protocolised nature of the trial was beneficial in circumnavigating potential implementation challenges and providing dedicated time for the whole practice to consider implementation relevant to the local context. The shift in perceptions and realisation that care could be improved was pivotal in obtaining participant engagement and buy-in to implementation as it highlighted the evidence to practice gap and how care could be improved. All of these factors were facilitated by the fact that the intervention did not

require changes to current work systems and processes, and that it provided transferrable skills for managing other LTCs.

The ways in which general practices had the potential to transition from 'knowing' to 'doing' was facilitated by the recognition of alternative drivers for implementation, the general practice culture and staff attitudes towards implementing the intervention, maintaining the 'balance' within a practice, and clinical academic collaboration. Reduction in referrals to secondary care was one of the main alternative facilitators of implementation in the practices. KM occurred with groups of enthusiastic individuals and this was enhanced by the focus group discussion. The focus group discussion was a central facilitator of KM within the general practices as it enabled co-production of implementation action plans. The focus groups provided a conduit between the research-evidence provided by the academic organisation and the clinical context of the general practice organisations.

6.4.2 Comparison with existing literature

The findings reported in this chapter build on existing theoretical knowledge relating to the i-PARIHS framework. The findings of this study have illustrated how a whole practice approach and bridging academic and clinical organisations were key features of the facilitation process which are not explicitly reported in the theoretical literature relating to i-PARIHS. A novel finding which relates to context is how the facilitated focus group discussions were not conducted within the protocolised nature of a trial which may be beneficial for implementation. These were the unique elements identified by the control practices within this study, that may have been absent with the intervention practices in the trial. Furthermore, a key feature of the intervention which provides additional insight into the innovation domain of the i-PARIHS framework was that it was seen to enhance care whilst maintaining practice balance in terms of workload. The key features of the findings from the focus group data, mapped to the domains of the i-PARIHS framework are represented schematically in Figure 15. This also represents the notion that facilitation was a central focus of this study which mediated the context, recipients and innovation domains.

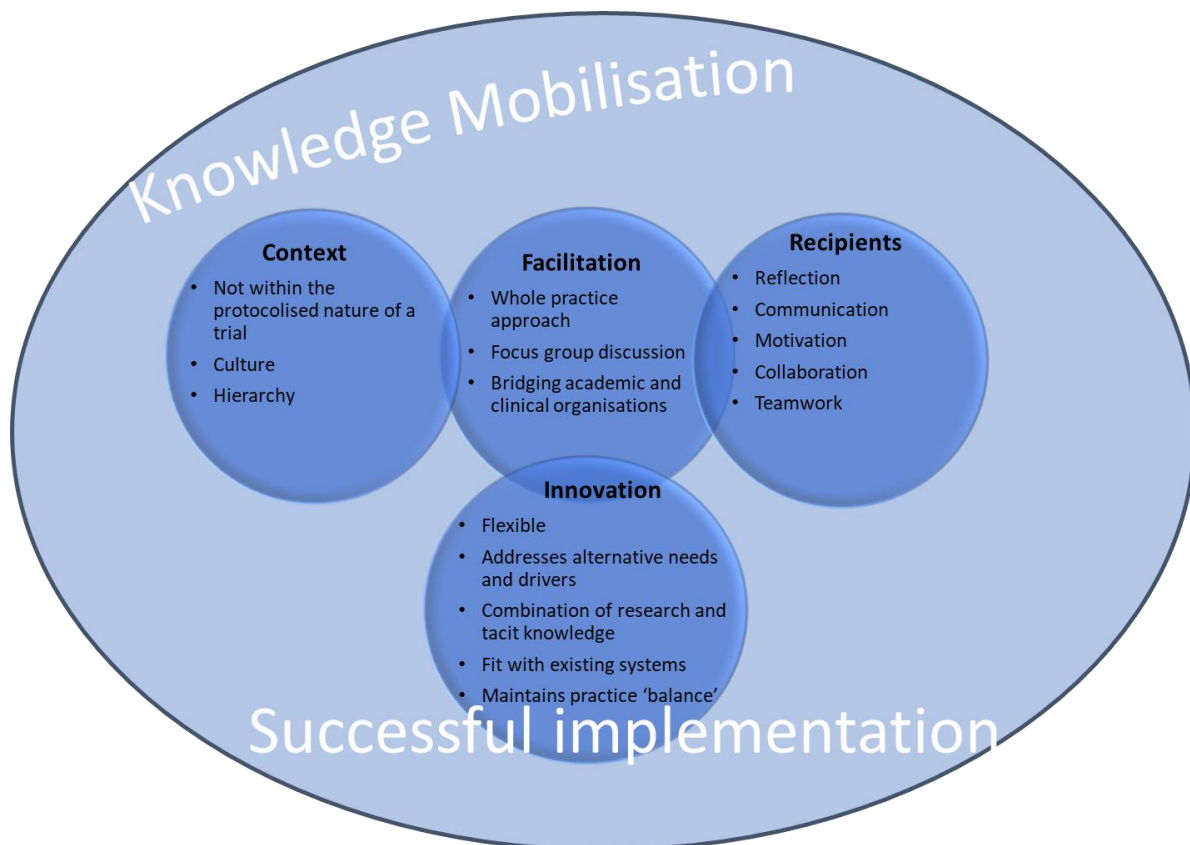


Figure 15 Schematic representation of findings from the analysis of focus group data mapped to the i-PARIHS framework

Context

Feedback processes and communication were features of local and organisational culture and context. A supportive practice culture and team collaboration for implementation were identified. A review by McInnes et al. (2015) identified how clear roles and responsibilities influenced teamwork and collaboration between GPs and practice nurses in general practice. The focus group data highlighted how the dedicated time and space for discussion enabled an understanding of each other's roles and divisions of labour within the general practices as part of implementation planning. The presence of hierarchical structures in primary care practices has been identified as challenging multidisciplinary work (McInnes et al., 2015). The focus group

appeared to mitigate hierarchical structures and organisational constraints and was seen to decentralise decision making with all participants seen as equal partners in implementation. This, therefore, removed any potential barriers to practice decision making and enabled the teams to work together to adopt the intervention.

For the practices within this study, implementation of the innovation was optional and no longer as part of the research trial. By identifying HCPs' perceptions and contextual factors affecting local implementation, a sense of ownership was seen amongst the practices whereby choice and flexibility became important facilitators of implementation (not imposed as with the intervention practices). The interprofessional nature of the discussion and a sense of being part of the same team were also central to this.

This study contributes to the evidence on recommendations for designing implementation trials in OA (Allen et al., 2015). Good conduct, practice, and reporting of trials are important features of trial design and a dissemination strategy is advocated following all trials (Chan et al., 2013, Begg et al., 1996). However, in practice, the dissemination stage often takes place long after the trial has finished and may be unidirectional. In this study, the training enabled practice-based learning from the trial to be disseminated almost immediately after the trial had finished. Flexible approaches to implementation trials that enable delivery to be tailored to local circumstances are advocated in other studies (Allen et al., 2015, Craig et al., 2008).

The training and facilitated focus group discussions were conducted when no further trial data were being collected and the results of the trial were

unknown and therefore, was unlikely to influence decision making within the practices. This enabled practiced-based evidence, that suggested the approach was useful, to guide potential implementation, and for decisions to be made based on a combination of formal research-based evidence, local contextual knowledge, and tacit knowledge rather than a dominance of research evidence only (Green, 2008). This aligns to the concept of 'mindlines' (Gabbay and le May, 2004) discussed in section 2.2.

Facilitation

The nature of the whole practice approach supports the suggestion that involving the whole practice (or group) increases the likelihood of uptake of interventions (Grol et al., 2004, Grol and Grimshaw, 2003). Creating the protected time and space to support effective team working and an efficient interdisciplinary approach from a multidisciplinary workforce in primary care is recommended by Health Education England (Commission, 2015). General practice working culture typically involves a closed model whereby HCPs operate independently, in silos, often with limited interaction or communication within or between professional groups (Forsdike et al., 2018, England, 2016, Chesluk and Holmboe, 2010). This can inhibit reflection and collaboration and a lack of multi-disciplinary working can have negative implications on patient outcomes and experience and is likely to impact implementation (Babiker et al., 2014, Borrill et al., 2000).

The whole practice approach provided a forum for effective communication, training for all team members and clear shared goals. All of which are suggested characteristics of cohesive healthcare teams reported in other studies (Chesluk and Holmboe, 2010, Harris and Zwar, 2007, Grumbach and

Bodenheimer, 2004). Team learning and the opportunity to network with peers were beneficial features of workshops reported in a study by Lineker et al. (2009). Their study aimed to implement and evaluate an educational programme to disseminate recommended care for RA and OA. The authors concluded that inter-professional learning may be a successful strategy for disseminating guidelines in primary care and supporting patient self-management.

The process of the focus group discussion was central to KM with the general practices in this study. By inadvertently mediating between the context and recipients (general practice staff/participants), facilitation enabled co-production of implementation plans whereby participants could consider issues pertinent to local implementation and bridge the academic and clinical settings.

On reflection, at the time when the focus groups were conducted, the idea of co-production was not as recognised at the time of writing this thesis. Co-production is a concept that reflects a partnership culture between key stakeholders to develop and mobilise different types of knowledge (Vindrola-Padros et al., 2019). Co-production has been commonly reported as an important feature of research (Hewison et al., 2012, Martin, 2010) that often focusses on involving patients and the public. For example, initiatives such as the James Lind Alliance Priority Setting Partnerships, enable clinicians, patients, and carers to work together to identify and prioritise areas for research. However, co-production is also suggested to enable the implementation of research (Bosworth et al., 2010).

Varying levels of engagement between research or academia with HCPs have been reported and are suggested to ensure the practical application of findings and enable more actionable research (Ovretveit et al., 2014, Martin, 2010). Co-production provides incentives for both parties and insights into potential challenges of implementation; it ensures that innovations are more relevant to the local context and hence translatable into practice (Ovretveit et al., 2014). However, sub-optimal working relationships between academia and general practices have been shown to negatively impact on engagement and subsequent implementation (Armstrong et al., 2016).

Facilitation was a key feature of initial cross-organisation collaboration. A sense of collaboration between the researchers and the research users was seen whereby KM was done *with* practice staff in the control practice, rather than done *to* them. A partnership developed between the researchers and the research users, whereby in the focus group, a collaborative forum was established and relevant questions were jointly asked and answered (Lavis, 2006). Furthermore, although evidence-based, empirical knowledge was presented as part of the training, this was incorporated with tacit, experiential knowledge (individual reflections and practice-based evidence gained from working with patients and colleagues). Context and facilitation were important features of combining different types of knowledge to formulate decisions regarding the delivery of best care within each general practice organisation. This is in line with existing evidence that suggests that successful implementation of research-based evidence in primary care requires integration of several sources of practitioner knowledge and situated knowledge within organisational contexts to influence decision making (Swan et al., 2017, Nutley et al., 2008).

Recipients and innovation

Successful implementation has been suggested to require knowledge, skills, and motivation from clinicians, as well as the practical and organisational conditions to enable the removal of barriers and support the change process (Wensing et al., 1998). Stakeholder buy-in has been reported as a key factor in organisational implementation in other primary care studies (Shaw et al., 2013, Ohinmaa, 2006) whilst, in contrast, negative beliefs about the usefulness of an intervention has been shown to hamper implementation (Kendall et al., 2009). The training package appeared to be an important factor in shifting the perceptions and motivating the participants (or in i-PARIHS terms, recipients) in this study to implement the innovation. In addition, the personal contact and group interaction in the focus group discussions harnessed the 'buy-in' for implementation from the control practices and enabled conversations regarding the ways in which the management of people with OA could be improved. This is in contrast to published qualitative work conducted with practices from the intervention arm of the MOSAICS trial that suggests that despite recognising the value of the intervention, the practice staff reported it unlikely that they would continue to implement long—term (Morden et al., 2015).

The ability of the participants to mobilise knowledge by reflecting and discussing the intervention over several weeks became a catalyst for action planning. This is acknowledged in the quality improvement cycle process (Improvement, 2018) to provide stakeholders with the opportunity to review and reflect on the impact of change and identify what has been learnt and plan subsequent steps.

The ways in which the innovation fit with existing policy, systems and processes whilst addressing other professional and organisational drivers was apparent in this study. A realist review conducted by Hoare et al. (2012) illustrated how supportive government policies relating to quality improvement and clinical governance have the potential to affect practice culture and promote implementation in the area of nurse-led care in general practice.

The notion that implementation needs to maintain the balance or equipoise within a general practice is not referred to in implementation theories, models or frameworks, but is supported in an ethnographic study by Armstrong et al. (2016). In their study, chronic kidney disease was regarded as a 'small concern' in comparison to other conditions in primary care. The ways in which primary care practitioners must make decisions about which activities to prioritise was shown and the tensions between the range of conditions and activities identified. The authors also illustrated how prioritising one condition over another in primary care was problematic for implementation as typically, a condition that was supported by the QOF took preference over other conditions.

6.4.3 Strengths and limitations

This is the first work to the candidate's knowledge to utilise qualitative focus groups with general practice organisations after completion of a research trial as a way of both evaluating and optimising implementation of research innovation for OA in primary care. A strength of this study is the use of focus group methods that enabled the *'explicit use of the group interaction to produce data and insights that would be less accessible without the interaction found in a group'* (Morgan, 1988). The focus groups captured diversity and richness amongst each practice whilst eliciting dynamic group learning and collective reflection. In this study, the focus groups were an appropriate method for exploring the perceptions whilst allowing participants experiences to be elicited in the context of the discussion (Kitzinger, 1995).

The main limitation of this study is that it was not longitudinal, therefore, it is not known from the research if the practices took any further action and whether it was successful or not. Despite this, although it wasn't researched at the time, one of the practices that took part in the focus group discussions became a catalyst for the JIGSAW implementation project and since then, implementation has continued both nationally and internationally.

<https://www.keele.ac.uk/pchs/implementingourresearch/makinganimpact/osteoarthritisandosteoporosis/jigsaw/>

Study limitations also include the small number of focus groups (n=3) conducted with three general practices, in one region of the UK, following a single trial in OA in a general practice setting. It is possible that the participating practices had good learning relationships with other practices or

organisations that led them to agree to take part in the study and arguably have higher levels of receptiveness and capacity for KM than the practice that declined. The findings should, therefore, be viewed as a starting point for further inquiry and warrants further exploration in other settings and conditions. Whilst this may limit the transferability of the findings, it enabled real-world engagement for implementation and highlights a possible additional stage for future studies of utilising the control group from a research trial to optimise implementation.

It is also important to note that the same researcher did not conduct data collection and analysis. However, the candidate spent time familiarising herself with both the audio recording and the transcripts of the focus group discussions to get a good sense of the data and also discussed emerging findings and data analysis with the researcher who conducted the focus groups.

6.5 Conclusion

This chapter presented the analysis of focus group data captured at the interface between a research trial and real-world clinical practice. In the context of general practices implementing research innovations, the incorporation of the opportunity for reflection and feedback, is crucial for unlocking the potential to enhance KM. Protected time and space for whole practice discussion and CPD may be valued by staff and can provide the forum to motivate staff to engage in KM. Facilitating opportunities to co-produce action plans for the adoption of research interventions in real-life practice is likely to be important as the contextual circumstances and perspectives of the intervention practices for the trial may differ somewhat to the control practices. The findings suggest that KM may be optimised in general practices that engage with academic institutions.

This chapter has highlighted how the potential value of the control arm of a trial in the implementation process immediately post-trial should not be underestimated; this work has illustrated that there may be a missing step in the implementation process from research to 'real life'. Trialists may wish to consider at the outset of their work, exploiting the control group to facilitate the next step of implementing an intervention and to share early findings relating to practice-based learning.

The following chapter presents the findings from the interview study conducted with individuals involved with the JIGSAW implementation project.

Chapter 7: Understanding uptake in the real world: an interview study

7.1 Introduction

The previous two empirical chapters (systematic review and focus group analysis) discussed the factors that influence the uptake of evidence-based guidelines for OA in primary care and explored the transition period between the end of the MOSAICS research trial and real-world implementation. These chapters identified how the role of facilitation required further exploration in this thesis. This chapter details the results and in-depth qualitative analysis of semi-structured interviews conducted with the aim of exploring the process of KM and understanding the experiences of key individuals involved in the JIGSAW implementation project. An overview of the method is presented, followed by the thematic findings from the study and detailed discussion of the results. Finally, the strengths and limitations of this work are discussed, and a conceptual model is presented before the chapter conclusions.

7.2 Overview of method

Chapter 5 (section 5.6) provides a detailed account of the methods of the interview study presented in this chapter. To summarise, individual semi-structured interviews were conducted with a range of individuals with experience of the JIGSAW implementation project. A pilot interview was conducted to reflect on and refine the initial topic guide and following this a bespoke topic guide was developed for each interview based on emergent findings and considering the professional discipline of the participant (Appendix 9).

A snowball sampling technique was initially used whereby existing participants identified other individuals within their network who also had experience of JIGSAW. This was later supplemented with a purposive approach to recruit individuals working clinically in general practice. This was to ensure the breadth and depth of perspectives and experiences from a broad range of individuals and gain insights into specific topics. No further recruits were 'snowballed' from the final two interviewees as theoretical saturation had been achieved. The data were analysed using thematic analysis whereby an iterative, cyclical process between the reviewing themes and defining and naming themes stage took place to ensure each theme was coherent. The research findings were interpreted in light of the i-PARIHS framework. The candidate maintained a reflexive journal and kept an audit trail, including memos, throughout the stages of data collection and analysis. Key considerations from this are presented in the discussion.

PPIE emerged as a cross-cutting theme therefore, in order to aid interpretation and analysis of data, a LINK¹¹ group meeting was convened to aid interpretation of the results. The expertise required of this group was 'expertise by experience'¹² of musculoskeletal health conditions and of KM and implementation in primary care. Five representatives met with the candidate on January 31st, 2019 and one other member sent comments via email. The main aim of the meeting was to check the candidate's interpretation of the interview data, considering the wider experience of the LINK members. The three main topic areas for discussion were:

- The role of PPIE within the Impact Accelerator Unit at Keele University
- The role of PPIE in KM
- The extent of influence/purchase of lay representatives on decision making

The outcome of this discussion is presented in section 7.4.

¹¹ Further details of the LINK group are found in the glossary and in Chapter 5

¹² An 'expert by experience' in the context of healthcare has been defined as a person who has experience of a medical condition and has gained specific expertise in living with this condition (NHS Improvement. 2018. Experts by experience [online]. Available at www.improvement.nhs.uk/resources/experts-experience/ [Accessed 15/05/19]

7.3 Results

7.3.1 Participants

A total of 13 stakeholders with experience of the JIGSAW implementation project participated in this study. Participants were from a range of clinical and non-clinical professional disciplines. These included two GPs with experience of commissioning, service planning and delivery, two GPs with implementation experience, a clinical academic GP, two practice nurses (one of which had implementation experience), a clinical academic physiotherapist, a commissioner, and individuals with project management and managerial roles. Two lay individuals were also interviewed. Four men and nine women took part in the study. Participant quotes are described in the results by a participant identification number and a role descriptor. The four role descriptors for participants are:

- GP – for GP participants
- L - for lay participants
- M - for non-clinical role such as managers, commissioners and project managers
- C - for non-medical clinicians such as practice nurses and physiotherapists

Of the individuals contacted via snowball sampling, four professionals did not respond to the study invitation (two clinical and two non-clinical). The duration of the interviews ranged from 25 minutes to one hour and 50 minutes. Three interviews were conducted over the telephone and one in a community setting at the request of the participant.

7.3.2 Thematic findings

Five main themes emerged from the data analysis of the semi-structured interviews: external context; internal organisational context; the knowledge mobiliser role; knowledge networks; and evaluation and sustainability. These themes describe and explore various aspects of KM following the MOSAICS research study into the JIGSAW implementation project in primary care. The five main themes are presented with illustrative, supporting quotations using the participants' identification number and role descriptor¹³.

7.3.2.1 External context

In terms of the pressures [in general practice], it's their volumes of work, it's everything else that they're being asked to do, it's the political environment, what else can I say? (P11M)

Throughout the interviews, several factors were identified that were external to, and acted upon, the general practice organisation. Participants described how these external factors impacted upon the ability of general practices to mobilise knowledge for implementation.

Within the external context theme, the following five sub-themes were identified: restricted resource and capacity; policy and the regulatory environment; service and system design; societal views on health; and accountability and role of the patient.

¹³ GP (for GP participants); L (for lay participants); M (for non-clinical role such as managers, commissioners and project managers); C (for non-medical clinicians such as practice nurses and physiotherapists)

Restricted resource and capacity

Several participants discussed how primary care services and demands have changed significantly over the last eight years since the original MOSAICS research was conducted. The financial crisis in 2008 was reported to have contributed to the stringent financial circumstances whereby one GP reported a 'levelling out' of income which affected the confidence of the practice to invest in new staff, services, and resources. A feeling of reluctance to spend money and implement new ways of working was described by participants discussing the political and financial climate. As a result, implementation of new ways of working, such as the JIGSAW approach for managing adults with OA, appeared to only be considered if no additional resource was required by general practices. Participants reported how the implementation of an intervention that provides no financial savings is seen as a low priority to GPs and commissioners.

The climate is changing rapidly. People are more and more reluctant to put their hands in their own pockets to, to fund a service that's not attracting any funding (P03GP)

General practice was described as a 'completely saturated service' and a sense of relentlessness portrayed amongst clinical participants, one of which reported 'we just keep being put upon'. The strain felt by clinicians attempting to balance the need for understanding and implementing new ways of working, such as the JIGSAW approach, with the demands of external pressures was evident in the data.

They just keep asking more of us and we haven't got the time to do that within the team we've got (P05M)

The notion of change fatigue was perceived to influence implementation by disengaging HCPs who are working under immense pressure and feel unable to attend training to be able to implement new interventions. However, one participant described how change fatigue could be overcome by implementers or knowledge mobilisers understanding current practice and helping clinicians throughout the process of transforming services by collaboratively addressing organisational issues.

Participants reported how the constant reorganisation in agendas, structures and changing priorities in primary care pose challenges for implementation such as staff feeling reactive towards pressures and unable to be proactive towards service improvement. Clinicians described a need for 'headspace' and time to stop and think about the evidence base to ensure the best services are being provided.

I mean the idea of bringing about more change in a practice that's struggling to make ends meet and trying to fulfil its obligations to its patients, then I think the idea of more change just doesn't appeal anymore. I think people are exhausted by too many changes and although this, as I say, is a nice project – really neat, small, not a huge workload –but anything extra, even if it's – you know, licking stamps to put on envelopes, they'd say no (P03GP)

You know, in fairness to my colleagues who are in the city particularly, you know, general practice is really, really struggling. Erm, struggling to recruit, overstretched, you know, people cannot see the wood for the trees or raise their head above the parapet...and people get fatigued, you know, I completely get that (P07GP)

Implementation was suggested by participants to have the potential to disrupt equipoise within a practice because doing more for one condition or group of patients was perceived to have the potential to detrimentally affect others.

It's a big problem and the more you have to do, the less you have time to do other things and if it's fire-fighting at the front door because you've got so many ill people or people who believe themselves to be ill coming through the door, then you need to be doing something about it and that does restrict what you can do elsewhere (P03GP)

The following quote further highlights the constraints in general practice capacity for the adoption of new ways of working.

If it's in primary care you've got to either fund it or create the funded time for them. If you're putting something in you've got to take something out because they just don't have the capacity (P11M)

Several other issues relating to capacity were identified, including a national recruitment crisis in primary care, a trend for more salaried GPs, a reduced desire to work in general practice and a high turnover rate of staff. One participant described a reduction in the numbers of GPs over recent years and how the challenges of recruiting both GPs and practice nurses have 'stressed the system'. One participant reported a 40-50% turnover in clinical staff annually at a neighbouring practice which exemplifies how contextually different circumstances influence the ability to mobilise knowledge.

The variation of staffing models and structure between practices was identified as having the potential to be both a barrier and an enabler to

implementation. A trend for fewer partners in practices and more salaried doctors was described, with several participants suggesting that there was a greater chance of successful implementation in practices that adopted a 'traditional' partnership model due to staff feeling a sense of ownership.

Some participants reported how funding helped to facilitate implementation by providing an incentive for engagement. However, several participants reported how funding did not facilitate implementation because this did not address issues with capacity or staff recruitment.

The GPs are saying 'but you know if I'm already working to capacity, what do I want more money for? you know, I can't, I can't generate the free time to do it', so I think time and some sort of back up resource is more important (P08M)

Policy and the regulatory environment

Findings from this study suggest that policy and the regulatory environment could affect KM both positively and negatively. Participants described how the increased pressure and demands from policy and regulatory factors have resulted in a 'target and payment driven' workforce, and a 'tick box mentality' that 'stifles innovation'. For example, the introduction of the QOF was perceived to influence practice staff views of what a clinical priority was and accentuated the target driven mindset of general practices by driving behaviour and processes to gain financial reward. One reason why some practices did not adopt the JIGSAW approach was suggested to be the need to meet existing targets hence JIGSAW was deemed a low priority by practice staff in comparison.

Despite the QOF aiming to improve standards of care and reduce variation for several conditions, including diabetes, participants felt that it inadvertently created a specific focus on 'competing interests' at the detriment to conditions such as OA. The following extract illustrates how general practices were seen to give a low priority to the implementation of new ways of working.

I think for a lot of them they sort of say, well it's a time factor, you know it's not top of the priority because it doesn't qualify for QOF and therefore because it's not on their plan of target hit list it's very much down the pecking order (P02C)

External regulatory processes, such as the Care Quality Commission (CQC) inspections, were identified as problematic in the implementation of new innovations that did not align to the inspection criteria. In the absence of other drivers, the need to adhere to NICE guidance for the management of OA alone was not a motivator for the implementation of the JIGSAW approach. Despite this, one participant describes how this problem was overcome by using the implementation of JIGSAW as a bargaining lever, coupled with meeting CQC targets, to negotiate with practices and persuade them to buy-in to implementation to address local problems.

One was, 'Do you know? It will prompt you to do best care in line with NICE' and two, 'When you've got a CQC visit coming in...' – which they were about to have, so the CQC had just announced they were about to start inspecting general practices. They'd never been inspected before, so there were other drivers that give you a bit of a gift... 'When the CQC come in and say, "How do you know you do Best Care?" For

OA, you'll be able to say, "This template complies with NICE guidance and we can run a report". 'You know, it's up to you'. So, we had a double whammy (P05M)

In addition, one partner of a general practice explained how they identified JIGSAW in their CQC inspection and described it as a way of showing how their practice was 'doing something over and above what others are' for the quality of musculoskeletal care.

Service and system design

The system design was reported to stymie KM by encouraging working in silos and making cross-boundary working challenging. Working in silos was suggested to limit interactions between key stakeholders and resist information sharing. The descriptions of existing service design alluded to barriers or blocking of knowledge flow in primary care. These 'knowledge blocks' were described within and between organisations and professionals for example, between general practice organisations, between academia and clinical practice, and between primary and secondary care.

Service design is often just a patchwork of, erm, you know, sort of sticking plasters and, and small changes without anybody stepping back and looking at services holistically...I'm seeing loads (of system design barriers) at the moment, in terms of information sharing across organisations, systems, and processes that support clinicians to work in different environments (P07GP)

Participants described how many practices tend to work in isolation which encourages continued inward facing approaches to care and makes interface

collaboration unnecessarily challenging. Interviewees speculated that working more collaboratively in small networks would facilitate KM and implementation of best practice.

Several interviewees described how the system and service design had impacted upon the primary care nursing workforce. Participants reported huge variation in the role of the practice nurse in primary care due to the nature of GPs being run as small businesses. Practice nurses were reported to be 'really under the kosh' and to work with differing levels of autonomy which affected implementation both positively and negatively. A sense of practice nurses being a precious resource at the detriment of their own development was noted.

The following quotes illustrate how practice nurses in several practices engaged and drove the implementation of the JIGSAW approach because as part of the training, the academic institution provided an opportunity for them to 'talk to each other and to form their own networks'. It was suggested that this was the main driver and motivator for them:

Practice nurses have been ignored as a group. They get paid different amounts at different practices, they're not agenda for change, they've no right to CPD, they are employees of a GP practice, so the variation in practice nurse engagement could be huge. We have some practice nurses who didn't engage at all through to others who absolutely drove it and loved it like it was vocational for them. And you've got no leverage over that because the system has left them in a terrible place
(P11M)

We've provided all of those things on the back of osteoarthritis and so they embraced it, not necessarily because they are OA enthusiasts but because you know it just felt good (P08M)

Recruitment of practice nurses was identified as a barrier to the implementation of new ways of working as backfill was unlikely in most practices. A key challenge for practice nurses appeared to be the conflicting opinions regarding their entitlement to CPD, with the academic institution seeing this as an easy way to get them to access training, but the reality experienced was somewhat different.

Societal views on health

Participants report how the biomedical model affects societal views on OA thus influencing engagement with implementation as it provided them with the skills to provide reassurance and positive messages to people with OA. One participant described primary care as 'fighting a tidal wave coming in the other direction' due to the need for a culture shift to address unhelpful beliefs about OA which are often reinforced by the media or other clinicians. This was reported as a barrier for some practices implementing the JIGSAW approach.

I still think we're banging our heads against a brick wall as well. There's still a massive culture out there that says, 'What you need is a new knee'. What you really need is to put the new knee at the very back of the list and do all the other things first. I mean why not lose two stone in weight if you've got two stone in weight to lose? It can be done and it's a lot safer than having an operation of any sort (P03GP)

Accountability and the role of the patient

Several participants held the view that patients are imperative to driving change in primary care, due to their knowledge and expertise in their condition along with their preferences for how care should be delivered. Furthermore, one GP revealed how they felt there was a sense of 'mistrust' of GPs and in 'top-down approaches' for how healthcare should be designed and delivered thus reinforcing the added value that patients and the public bring to implementation.

I think that patient groups are perhaps one of the most powerful resources, in terms of pushing change. I don't see it as coming from above and I'm, I'm reluctant to say it, I don't think I'd see it coming from the medical profession as much as it has done in the past or might have done. So, I think it needs to come from somewhere and really, the people with the most vested interests are the patients, - for understandable reasons and I think they'll drive the agenda more than anybody else (P03GP)

7.3.2.2 Internal organisational context

The nurses in the practice are not allowed any free thinking really, they're very controlled and they have to do what the practice manager says. Whereas in the other practice, they're more like nurse practitioners (P12GP)

In this theme, the context within a general practice organisation is explored with reference to how internal organisational factors can impact on KM. This theme incorporates the following sub-themes: a culture receptive to change and KM; resource and capacity; and, local contextual drivers.

A culture receptive to change and KM

Participants described how implementation is influenced by several elements of the culture within a general practice such as hierarchy, attitudes towards change, relationships with external partners, communication, leadership and knowledge 'blockers'. The role of PPG groups in supporting decision making in one general practice was also discussed by several participants. Individual interest was reported to be a motivating factor for engaging with implementation and the opportunities for staff to have conversations with colleagues was also seen as positive in facilitating implementation.

The presence of hierarchy within a practice was reported to impact the social behaviour and cohesiveness of the group working within it. Variability of power and control for different professional groups was described that impacted on knowledge use and mobilisation in practice. A hierarchy was suggested to impact significantly on the implementation of JIGSAW, again due to power dynamics and the role and status that practice nurses had

within their practice. Instances, whereby one or two individuals exerted power and had responsibility for decision making within a practice, were described. For example, one participant described how a practice nurse wanted to drive change in the practice in which they worked, yet power hierarchy made this challenging and subsequently dictated whether that was successful. In some reported cases, practice nurses appeared to have a lack of autonomy over decision making as typically the practice manager or GP partners held discretion over decisions.

The notion of power dynamics was discussed by some participants, especially how one individual could block or facilitate KM in some practices.

So, it's either the practice manager or the GPs. If they're not interested or not engaged, then they rule the roost and this particular female GP did...and it's quite hard to get past that barrier (P12GP)

One participant spoke about the culture in one practice and how they perceived it to impede innovation and the implementation of new ideas or ways of working. This participant felt unsupported and unable to facilitate change due to the practice culture which they perceived to have been created predominantly by one individual.

Some participants appeared to take pride in the culture and approach of the general practice in which they worked, describing the team as 'early adopters', and 'forward thinking', with a 'can-do attitude'. One interviewee spoke about her mindset as thriving and responsive to challenges, yet they recognised that this was not commonplace in primary care.

Participants described examples of how new knowledge is viewed and given priority, both in practices in which they work or have links to. Practices that valued CPD and training were suggested to have a willingness of the practice staff to work together and engage with external partners. A distributed and flexible leadership style was reported as being important in optimising implementation.

The notion of practice hierarchy was not solely perceived as a professional hierarchy. Patient involvement, including the PPG, was reported to be essential in achieving successful implementation in one practice.

They've played a huge role I would say probably an underutilised one as well again through time, so by connecting with the patient groups, they have become spokespeople so they're part of the culture change for me. They have been able to articulate that to other patients, you know the change in approach and the reinforcement of understanding about conservative management. And that's only the start of the journey, you know it needs to go on but I think they've been, for me I felt they were powerful (P11M)

Resource and capacity

Participants report how the staffing model of a general practice affected HCPs attitudes towards and engagement with implementation and the extent to which staff have a vested interest in practice performance influenced engagement. A sense of ownership and accountability was perceived as necessary for staff to invest and engage in implementation. Having a number of staff on short or temporary contracts, or with less control over practice

affairs (for example salaried vs partnered GPs) was therefore seen as less conducive to operationalising implementation.

It wasn't for money. It was for providing a better service but if you're not part of that fabric of the organisation, you're not going to be interested in that (P03GP)

I'm most familiar with the partnership model, erm, because it's historical and I guess I feel most comfortable with that because you've got a bunch of people who are equals and are colleagues and although you might find it difficult to convince them, once you've got the body of people together, you know that they are all going to carry on thinking in the same way and that their management decisions, once they are joint, will be executed. I think you always get refuseniks in a practice so you might think you've got everyone on board but actually, there are one or two that don't want to do it but I think that's quite an easy model (P08M)

If you're ultimately responsible for your own destiny and your own pay, and your staff, and the welfare of your patients in a small population, I think you're going to be much more involved in designing that (P03GP)

In contrast, the challenges of implementing JIGSAW in a practice structure that has a workforce of employed GPs and locums were acknowledged.

I think one of the real difficulties with all employed people is that there's nobody actually managing it, clinically, and... or if it's a couple of partners, executive partners plus half a dozen employed doctors,

they will often be part time they will often be transient, and they won't necessarily want to do anything that appears to be extra so you start having to mandate things and find ways of doing it, and the GP partners, I mean they can determine the overall direction of travel but they are not going to be micro-managing employed doctors so I think it becomes very, very much more difficult (P08M)

Local contextual drivers

The characteristics and needs of a practice's local population reportedly influenced engagement with implementation in some practices. Factors such as an elderly, rural population were motivators to implement the JIGSAW approach whereby patient physical mobility was viewed as important. This, in turn, influenced how some individuals perceived and prioritised the knowledge from the NICE guidance. Even though implementing NICE guidelines was not an essential or mandated component of clinical care, it was seen by some participants to assist general practices with the management of the elderly practice population and people with comorbidities, to avoid repeated visits and reduce the burden on GPs.

Data suggested that some practices compared themselves with neighbouring practices and other local practices which reflected other facilitators of KM.

Oh, (name of practice) are doing this. We should follow suit' (P09M)

The wide range of agendas and priorities between clinicians and managers were reported to make implementation challenging. The following quote illustrates one clinician's perception that managers have little regard for EBP.

It may not be on the highest priority for a manager, a manager may be interested in the existing service or making it more efficient or cost-saving or getting rid of a waiting list, they may have their own specific targets that may not involve necessarily bringing in new evidence-based practice and that very much depends on the manager and the way they view evidence-based practice (P01C)

When asked about the best ways to approach implementation in a new general practice, participant 012 identifies the importance of understanding the local context.

You need to know a bit about the practice. So, if you sent me out now into (area) to do JIGSAW in a practice I'd never been – well, I don't know any of the practices. I would make some definite attempt to find out who worked there, what type of special services they offered, what that – their part of (area) was like, what types of patients were they likely to see before I went in. And who – how many nurses they had, so do a bit of homework (P12GP)

7.3.2.3 The knowledge mobiliser role

Someone who can broker information can make it concise, can separate the wheat from the chaff and can get the salient points across in an easily digestible way is important because as a busy clinician you just simply can't keep up to date with it (P01C)

The role of the knowledge mobiliser was a recurring theme in both clinical and non-clinical participants' interviews. This theme is firstly considered in terms of the perceptions and experiences of the role. The implicit nature of the role is then discussed.

Perceptions and experiences of the role

Participants reported the knowledge mobiliser as an essential role for optimising the implementation of JIGSAW; clinicians alone were perceived to lack the capacity in some general practices to drive change for OA considering it was often perceived as a low priority. This quote indicates how KM may be accelerated by the inclusion of an additional facilitator in primary care.

I think having people whose job is dedicated to supporting and facilitating knowledge mobilisation might help the process (P01C)

The role of the knowledge mobiliser in primary care was portrayed as a role that not anyone could do, however, those who did were suggested by one GP to have one chance to 'make a good impression' and 'get it right the first time'.

Participants expressed uncertainty as to whose role it is to mobilise knowledge. Some participants viewed it as everybody's role, and some

viewed it as the role of a senior person within an organisation such as a manager who can influence decision making. However, this view was supported by underlying assumptions that traditionally the NHS has been driven by a top-down approach with managers dictating how services should be delivered, which was opposed in several interviews where participants suggested that the most optimal way of mobilising knowledge was 'bottom up'. One participant described how and why they perceived 'top-down' initiatives as barriers to KM and advocated collaborative working between academia and clinical practice, which they perceived to be a key ingredient in the JIGSAW project.

We (academia) don't have the monopoly on the good ideas, so I think the top-down approach doesn't work because you don't understand the territory, you don't understand the people, you don't understand how they work. It also doesn't work because there's an instinctive objection to that because there have been so many bad top-down initiatives in healthcare and people don't believe you, so I think you're on a loser to start with. So it's got to be persuasion and working, starting from where people are (P08M)

The participant went on to describe their desired approach to mobilising knowledge for implementation following their experiences with JIGSAW.

I think a kind of educational approach is also quite useful in that it always starts with do you know, you already know an awful lot about this and I'm not going to be arrogant enough to tell you how it is, I'd really like to discover what you know and what you think you need to

know, and that applies to organisations but I think it applies to individuals (P08M)

Findings indicated how patients and the public were perceived as pivotal knowledge mobilisers of JIGSAW and were described as 'strong movers of change' with KM processes to benefit implementation in one general practice. One participant reported how they believed that academia and clinical practitioners were 'missing a trick' with patients as mobilisers to communicate messages to others as they had observed the benefits of patients as knowledge mobilisers in JIGSAW.

I guess it's giving people, making everybody a patient champion making everybody a person champion, a champion of knowledge, just giving people that information and the encouragement to just go out and talk to others and use their own networks to spread the message wider (P04L)

Some participants reported a desire to make the knowledge mobiliser role more formal for example with a job specification, and the provision of dedicated, protected time to mobilise knowledge was reported necessary. The benefits of a hybrid role for KM and implementation were also articulated and it was suggested that implementation is less likely to be successful in general practices that do not have staff adopting a hybrid, or boundary-spanning role. One participant, who had experience of working in practices with individuals who had boundary spanning roles, described the value of this for KM.

It would be really useful if they had one foot in an NHS camp and one foot perhaps in an academic camp or you know a clinical camp as well, so they are able to bridge those different worlds (P01C)

An array of attributes of knowledge mobilisers were described by participants including the ability to filter best practice evidence and translate to stakeholders in a meaningful way and framing knowledge for different audiences. Knowledge mobilisers were perceived as being good sales reps in the instance of best practice for OA.

I think this is basically about the implementation, is helping people out to transfer from one point, from one stance to the other. And on the way, showing them little gains, just to keep the interest, I guess it's almost like the salesperson techniques (P13GP)

One of the key features of the role was having an intimate knowledge of delivery system context. The ability of the knowledge mobiliser to understand the drivers of different stakeholders and by knowing what buttons to press, to navigate barriers and lever change was also recognised. To do this, however, participants described how knowledge mobilisers must really understand the context and language of their audience and be valued by them. Again, collaboration and the facilitative nature of the knowledge mobiliser role were portrayed.

I take the view that we can provide some means, we can enable things to go on but actually, we can't do the implementation, we can't get into a practice and tell them how to do it, they are the deliverers of the healthcare so we can only really help them with it (P08M)

When one participant was asked about whether they adapt their language and message depending on their audience, they stated:

I 100% do and you know one of the things that you know is my USP (unique selling point) is definitely that you know I don't have huge knowledge in any of these areas but I have seen the language that people speak and the barriers that occur because people do not know what somebody's talking about or what the systems or processes are we have to go through to get something done (P11M)

Several participants recognised that the management of OA was not a high priority for many clinicians or commissioners and so a variety of 'sell points' were required to ensure that knowledge was mobilised in a way that addressed a range of needs and priorities.

The implicit nature of knowledge mobilisation

Whilst knowledge mobilisers were seen to be individuals who 'wore many hats' and undertook several roles, individuals who were perceived by other participants to be key knowledge mobilisers did not see themselves as knowledge mobilisers, even when addressed specifically. Participants appeared to revert to type when discussing and labelling their role as it appeared easier and more comfortable to describe the role of a researcher, clinician or manager as these are surrounded by less ambiguity and more certainty. Mobilising knowledge was considered a tacit or implicit part of another aspect of their role such as setting up a new service, coordinating a project, or engaging external partners. In addressing other elements of their role, some participants were key to mobilising knowledge but lacking cognisance regarding this.

Interestingly, the lay interviewees expressed an assumption that clinicians knew and understood KM to be part of their role and that they had a more advanced status in KM than patients did.

Professionals will take it as their, it's their job, it's part of their job to mobilise knowledge between colleagues, to make sure that you know the fellow GPs in their practice know about this new research so it's natural to them, but patients aren't given the knowledge in the first place to be able to do it (P04L)

A lack of formalisation or classification of the role may explain the disparity shown in the data. The role of a knowledge mobiliser was identified as having different meanings and implications to different people depending on the task or context.

7.3.2.4 Knowledge networks

To be honest that whole process would be very challenging without the strong links that we already had (P01C)

This theme explores the ways in which the affiliation to various networks or groups facilitated the transfer of knowledge across organisational, professional and societal boundaries. This is explored in relation to the following sub-themes: confidence; problem-solving to overcome barriers; and, a catalyst to decision making.

Knowledge networks comprise a range of formal and informal, professional and lay groups that were different for everyone. These include topic-specific Communities of Practice, GP locality boards, GP federation, professional CPD groups, social networks, PPG groups, the LINK group from the academic institution, conversational circles, and professional and social WhatsApp messaging groups. The University of the Third Age¹⁴ (U3A) was described as a good network for sharing which was influential in mobilising knowledge to a large audience in one area. This was subsequently reported to generate a 'groundswell of interest' whereby patients were asking GPs for access to the JIGSAW clinic or approach. Participants described this as a 'bottom-up' approach to KM.

Confidence

One of the reported advantages of being part of a knowledge network described by participants was that it provided a sense of confidence in

¹⁴ U3A is a UK movement of retired and semi-retired people who come together to continue their educational, social and creative interests and continue their learning in a friendly and informal environment

implementation because the affiliation to a wider team added credibility to the venture and participants felt confident in trailblazing something new. In addition, the association with a knowledge network to the academic institution gave the recipients' confidence in those mobilising knowledge and driving the implementation of JIGSAW due to the reputation and credibility of the previous ventures of the organisation, and the kudos and reputation associated with key individuals who work there. This was perceived to gain successful engagement of key stakeholders for implementing the JIGSAW approach.

The findings indicate how different types of knowledge were given priority amongst different networks. For example, one of the clinical participants who was also on the board for GP Locality meetings (with clusters of GP surgeries from the same area) identified how sharing best practice was a key component of these meetings via word of mouth messages. As a result, they described how one local practice was interested in implementing the approach as a result of conversations at an unrelated meeting. In contrast, data relating to community patient networks identified how attendees at local U3A sessions shared a positive message relating to keeping active with joint pain. In both instances, the data show how knowledge was perceived to come from credible, trusted sources within the network and was successfully mobilised.

Problem-solving to overcome barriers

The affiliation to various knowledge networks was reported to be beneficial in optimising implementation because it was perceived to accelerate implementation by overcoming barriers and enabling messages to be shared

effectively with a wide audience. One example of this was where academic and clinical staff utilised patient networks (in the local PPG) to circumnavigate barriers to implementation and optimise the process. Participants reported how including all relevant stakeholders at the start of the research journey was beneficial because it provided an opportunity to identify any potential barriers and allowed stakeholders to understand the context for implementation.

You start to understand where the systems and processes are letting people down and actually where what you're doing can either help to resolve it or what barriers are going to be created because people don't even realise that something is going to be a problem you know?
(P11M)

Knowledge networks enabled participants to understand and witness first-hand the language that people speak and the factors that may hinder implementation. The range of professional networks described in the interviews appeared to enable participants to understand barriers, drivers, and consequences for implementation for other disciplines and organisations. This facilitated a common ground for appropriate engagement and effective knowledge sharing with knowledge mobilisers recognising how best to 'sell' the idea of implementing the JIGSAW approach based on the needs of their audience.

They really don't want to know what the research is. We find that a lot. What they want to know is what the cost savings is; how it's going to affect them and their referral rates and how easy is it to implement. So, I think if there was a business case that speaks that language to

commissioners that gives them, 'this is what it can do for your CCG if you implement it. After 12 months, you'll be here' – that kind of thing
(P09M)

Knowledge networks also facilitated symbiotic relationships between individuals and organisations that enabled individuals to draw upon the skills and extended networks of others to overcome barriers. Several examples of individuals or organisations 'doing favours' for others in different contexts were described which represented the ability to circumnavigate challenges and override the system, sometimes by deviating from formal rules or procedures, to create a new pathway for achieving a goal that may not have been achieved by following official channels. The following extract highlights the benefits of cross-boundary networking.

For certain things which helped us, I mean she helped us give an insight into how (area) CCG works but she was also really good in that although she was commissioning for (area) CCG, she kind of sat on our side of the fence as well. So, she helped us reflect what we'd done in (area) to then move onto (area) and she was like, 'I don't, I don't think you should do what you did with us because...' (P09M)

One participant described how key individuals within a knowledge network facilitated KM in navigating traditional ways of working and organisational boundaries. This enabled them to implement the JIGSAW approach and affect change across organisations.

At different stages, different people might take a little bit of time with things and slow the whole process up so to be honest that whole

process would be very challenging without the strong links that [academic institution] already has with the local NHS trust and without people like [name] who act as a conduit in-between (P01C)

Participants reported how implementation was optimised if they received knowledge from a trusted, credible source often within their peer network. The power of this was reported with patient networks whereby peer networks were a vehicle to mobilising knowledge more broadly than by academic approaches. A way of overcoming organisational boundaries was described as having someone in-house who can shift thoughts and 'pull a few strings'. The following quote illustrates another benefit of knowledge networks.

They provide you with an opportunity to challenge the way that you have been doing things or your perception of the way that you're doing things or the way, or your perceptions about the way that they're perceived through those contacts with people from, you know who are coming at it from a different perspective. So whether it's the orthopaedic surgeons, whether it's somebody from a different area of the country you know, it's that exposure to people who are asking you why and also listening to how, you know how people have got to where they've got, er, with their progress and implementation. And then in addition to that, it's that exposure to yeah okay the evidence is there and case studies are there but actually it's the human narrative. So, the networks for me is about human contact with other people, it gets far more synapses I think than reading something (P11M)

Patient networks were identified as critical in KM and challenging the perspectives and direction of musculoskeletal care, particularly for commissioners.

They've played a huge role I would say probably an underutilised one as well again through time, so by connecting with the patient groups, they have become spokespeople so they're part of the culture change for me. They have been able to articulate that to other patients; you know the change in approach and the reinforcement of understanding about conservative management. And that's only the start of the journey, you know it needs to go on, but I think they've been, for me I felt they were powerful. And they were a powerful thermometer for me as well (P11M)

The patients have helped us shape all of this in (area) because when we consulted with them, they have changed our language. So, we talked about self-management and obviously part of what the practice nurses are doing and whatever is to help to support patients in being empowered in self-management, but they gave us a very clear message and we don't talk about self-management anymore, we talk about supported self-management. Because what they reflected to us was that they felt that that this was an excuse to just dump them and what they need is help with that along their pathway. So that is changing the way then, it's changing the way now I'm working and how we'll look at supporting patients now in the service that I'm in now. It's about ensuring that they have support along the way with their self-management at the different decision points (P11M)

A catalyst to decision making

Knowledge networks were suggested to increase the relevance and value of the knowledge shared because of the team approach to considering all options and making decisions. The networks provided a forum for participants to discuss new ways of working in their setting and to understand the real-world benefits of implementing the JIGSAW approach.

To have the right people around the table from the beginning from when you're trying to describe what it is that you want to do because that's when you'll pick up what the win, wins are and what the barriers will be (P11M)

Clinical participants reported how the networks of the academic institution were important for optimising the implementation of JIGSAW because they enabled a wider reach for implementation messages to be shared which provided a platform for KM. Interviewees with commissioning roles or experience also spoke about the added value of accessing networks via the academic institution with regards to optimising implementation in the area.

The networks of patients and the public were instrumental in the successful implementation of JIGSAW in one practice and several participants described the public interest locally with regards to the OA service being provided. When discussing the launch of the new JIGSAW service, one participant was asked about the value of patients and the public:

Very important and, as I said, that created the groundswell of interest simultaneously with what was happening with the clinicians and if anything, possibly more important, because a lot of people were either

brothers, friends, of the initial people I spoke to in that PPG group, you know, might be a sister , a mother, a whoever, they kind of then told them about the service, they went in, spoke to their GP, said I'm really interested in hearing more about this or can you refer me to the new physio service (P01C)

The importance of face to face mobilisation of knowledge to share stories, with concise messages or sell points along with the human narrative from self-selected peers, was described by several participants.

Having the key decision makers together to initiate implementation and sustain engagement and momentum was in part linked to the confidence that knowledge networks engendered, but, also having contact with key decision makers was a catalyst to action in some practices. Despite this, one deviant case was noted whereby a participant describes the challenges associated with implementation momentum and their frustrations that the JIGSAW approach had not just 'taken off'.

It needs pushing all the time, it's the snowball uphill kind of thing (P08M)

This illustrates the challenges associated with implementation despite the affiliation to multiple networks being reported as enabling the process.

7.3.2.5 Evaluation and sustainability

'It needed to be a win, win for both of us' (P11)

This theme reflects the key issues relating to evaluating and sustaining the implementation of JIGSAW. The range of desired outcome measures is explored first, followed by an exploration of some of the challenges with evaluation and sustainability and the ways in which these were mediated.

Participants reported a range of desired evaluation outcomes such as pathway data including referral to physiotherapy, orthopaedic or to imaging, financial outcomes and patient outcomes (dependent on each stakeholder) and how failing to address some of these could hinder implementation. Furthermore, the data illustrated how evaluation that was tailored to key stakeholder drivers and priorities was required. One participant reported how current system design stymies evaluation by not enabling the collection of relevant data and felt that primary care as a collective was poor at evaluating new services or ways of working that have been set up. This reflects the underlying issues associated with the type and nature of data that is given priority by different stakeholders. The following quote illustrates some of the challenges with evaluation.

Data collection that isn't built because the business intelligence units in CCGs and in Trusts is all about collecting activity. You often can't get the data that you need as a clinician because nobody's collecting

that and you won't get it collected if it's not going to give a cost saving or it's not aligned to a particular KPI¹⁵ for a service (P11M)

The support of the research team and the Impact Accelerator Unit (IAU) was essential for implementation and sustainability in some practices. One participant reported how the ongoing implementation of the JIGSAW approach ceased when the research team stepped away. Another participant described a more ad-hoc implementation of JIGSAW several years following their initial training. Co-production of implementation plans with all key stakeholders at the start of the research journey was suggested as a way of ensuring appropriate evaluation of implementation and collaboration between clinical and academic organisations/communities was a central facilitator of implementation.

Quite often what they want, when there is a necessity for change, they want you to give them a plan every step of the way. And if I reflect back to how successful MOSAICS was, they were supported to make the change every step of the way and everything was funded but you know right down to the setting up the clinics, the training, when the nurse was out, backfilling the nurse, you guys supported them every step of the way. And once you've stepped away actually even when we continue to fund the enhanced service, practices from the first fell off of the participation (P11M)

The findings indicated a discordance between the evaluation data required at a commissioning level compared to the evaluation measures selected by

¹⁵ KPI = Key Performance Indicator - a measurable value that demonstrates how effectively objectives are being achieved

academia as part of the research study. Commissioners not only required data relating to cost but also wanted data illustrating the impact of implementing JIGSAW across the whole musculoskeletal pathway including any unintended consequences such as increased physiotherapy referrals.

Commissioners want the numbers about money...yeah, they want the data, the hard data... cost improvement schemes..., if I can convince them that by doing JIGSAW we're reducing the number of people going for knee replacements, then they'll buy into that. So, it's financed at the moment. But in (area) they weren't interested in the quality practice, I tried to sell it to the commissioners and the GPs as this is a quality thing that you're doing, you're improving people's lives, reducing their pain levels, reducing their fitness, but no (P12GP)

In addition, evaluation was suggested to be about the use of real-time data by one participant who illustrated some of the tensions between academic and commissioning agendas and the need for timely evaluation.

Without being overly critical, obviously, the timeframe that was put into EMIS¹⁶ for the purposes of JIGSAW. Right from the outset, we raised that it didn't provide with information that would be useful to us. So you didn't provide us with pathway information so we didn't collect any information about whether the patient's outcomes, whether they were any problems, whether they were referred on for an X-ray, whether they were referred to secondary care, whether they were referred to physiotherapy, none of that data was collected. And of

¹⁶ EMIS web is the most commonly used clinical health information technology system in primary care in the UK

course, as a commissioner, you're going to look at the whole pathway. So I appreciate, I understand an element of where this was coming from was you know this was about the analysis of the interaction with the patient and the number of times that this was fired in the system and all of that. But actually, it needed to be a win, win for both of us
(P11M)

Er, so it was reviewed, and I could not honestly, present any data to demonstrate a benefit to the CCG. And so the funding of it was removed, I didn't even have audit results from (academic institution), because they didn't complete their audit until it was quite delayed it was not completed until after the enhanced service was reviewed
(P11M)

7.4 Discussion

7.4.1 Summary of main findings

This chapter has presented the findings from semi-structured interviews conducted with individuals with experience of the JIGSAW implementation project. Key findings related to the ways in which KM was influenced by external contextual factors, internal organisational factors, the knowledge mobiliser role, knowledge networks and evaluation and sustainability.

The IAU at Keele played an important role in knowledge networks, and in establishing an academic-clinical collaboration to mobilise knowledge and optimise success. The presence of knowledge networks was important in the implementation of JIGSAW, with patient and public networks playing a key role in some examples. A continuum of knowledge mobilisers appears to exist, with differing views on the need for explicit, formalised knowledge mobiliser roles being identified. The need for knowledge mobilisers to 'sell' an intervention for the management of OA and appeal to a range of stakeholder motivators was shown.

Practice culture, including hierarchy, leadership and decision making, and the presence of change fatigue was reported to play a significant role in the success of the implementation. Practice nurses were integral to implementation in some practices; however, some participants describe examples whereby practice nurses' ability to drive forward the implementation of JIGSAW was stymied by other individuals and the resultant culture within the practice. The findings identified the importance of evaluation and sustainability planning early in the process, with all key stakeholders, and how different stakeholders perceived different evaluation

measures as important. This was of critical importance as a lack of data led to the withdrawal of implementation efforts.

A number of the key findings relate to facilitation in terms of the role of the knowledge mobiliser and knowledge networks. This builds upon the results from Chapter 6 relating to the concept of facilitation, as considered within the i-PARIHS framework, which depicted facilitation as occurring in protected space with a facilitator present. This chapter enhances understanding of this by presenting the active involvement of facilitation (the doing) as well as the knowledge mobiliser (the role) in the context of knowledge networks. The findings illustrate both tacit and explicit elements of facilitation and reveal how both of these may be required in order to achieve successful KM.

7.4.2 Comparison with existing literature

The findings are now discussed as aligned to the relevant domains of the i-PARIHS framework.

Context

Many of the findings relating to either the external or organisational context within the general practice are supported by existing literature and theory. For example, the need for a positive culture that is receptive to change (Weiner, 2009, Leatt et al., 2006, Rutherford et al., 2005), the importance of leadership (Rycroft-Malone et al., 2015, DiCenso et al., 2010), and the impact of hierarchy within a general practice (McInnes et al., 2017, Sangster-Gormley et al., 2011, Weiner, 2009). Successful engagement with KM in this study was not seen to be a prescriptive or systematic process but was reportedly ad-hoc and different for each general practice organisation dependent on the individual context and culture.

In this study, for some of the general practice organisations, the practice nurses were central to driving and leading change and implementing the JIGSAW approach. This was in part facilitated by the motivation and engagement of practice nurses with the JIGSAW training and partly by the ability to communicate ideas and plan with the other practice staff where they work. Findings relating to how practice nurses often work in silos and may feel like they do not have a voice are consistent with work by Forsdike et al. (2018) who identified how a supportive practice culture is required to facilitate advanced roles for practice nurses and how practice nurses working in small general practices with informal and flexible organisational governance, experienced greater autonomy in their role.

According to the COM-B behaviour change wheel, capability is an important component of the implementation of best practice and this was relevant to the practice nurses in this study who had attended the JIGSAW training (Michie et al., 2011). This, along with the support from the IAU, and open communication channels within a practice provided both the opportunity and motivation to engage in implementation, which is also recognised in the COM-B model (Michie et al., 2011). A possible explanation as to why practice nurses were instrumental in driving implementation in some practices is that JIGSAW presented an opportunity to practice nurses whereby complex factors such as capability, opportunity and motivation were aligned as a result of the circumstances provided by the training. Furthermore, the JIGSAW approach was also able to redistribute workload and 'unburden' the GPs which has been shown to be a facilitator of implementation in other studies (Moffatt et al., 2017). This may explain the buy-in and engagement from GPs in encouraging practice nurses to lead the implementation of this new way of working.

Whilst the impact of organisational governance and culture and the variability of practice nurse roles is recognised (Forsdike et al., 2018, McInnes et al., 2017, McInnes et al., 2015), this chapter reports novel findings relating to the degree of autonomy and leverage that practice nurses have over decision making in general practice. The findings suggest that as a professional group, practice nurse involvement in implementation was at the discretion of somebody else, usually a GP or possibly a practice manager. Conflicting opinions appeared to exist regarding the entitlement of practice nurses to CPD and practice hierarchy seemed to dictate practice nurse involvement. Whilst practice nurses perceived JIGSAW as enhancing their

professional development, there was evidence to suggest that the reasons that some nurses were supported or encouraged by other professionals in the practice to lead the implementation of JIGSAW, was because of other drivers and not the development of the nurses.

Unfortunately, it was not possible to recruit a practice manager to be interviewed and so uncertainty remains as to their influence on KM within general practice. According to some of the participants in this study, the leadership and communication style of a practice manager plays a significant role in the adoption of new ways of working. This also depends on power dynamics in decision making within a practice. Interestingly, one of the practice managers contacted to take part in this study worked within a practice where it was reported that some of the key decision makers within the practice were not engaged with the JIGSAW approach. Despite a paucity of primary care research involving practice managers, Forsdike et al. (2018) interviewed two practice managers from three general practices in their qualitative study exploring the role of practice nurses in Australian general practice. The authors, however, do not pass comment on the potential challenges of recruiting practice managers to a research study or the implications of interviewing practice managers in their study.

The findings presented in this chapter illustrate some of the potential tensions between the needs and drivers of commissioners compared to those of academia. Comparisons can be drawn with a recent Kings Fund report (Collins, 2018) which describes the challenges of the adoption and spread of innovation in the NHS with reference to the ESCAPE-pain programme (for more detail on ESCAPE-pain see Appendix 1). The report highlights the

conflicting drivers and agendas of academic and commissioning stakeholders which include commissioners attempting to shorten the programme to reduce costs and also the difficulties relating to funding arrangements and contracts by the nature of service and system design.

Previous NIHR funded research, examining KM and the use of research evidence by commissioners and within NHS organisations, has also demonstrated that the context of decision making for commissioners needs to be understood by researchers and that researchers need to make their research as useful as possible to optimise uptake (NIHR, 2018, Swan et al., 2017, Wye et al., 2015). A qualitative study by Wye et al. (2015) explored how commissioners use information and academic research in 'real life' decision making. The authors concluded that researchers need to develop relationships of mutual benefit, use verbal instead of written communication and co-produce local evaluations to address pragmatic commissioning needs. Cameron et al. (2018) identified the importance of joint commissioning ventures to provide knowledge to commissioners to support decision making and ensure that services are developed to reflect the needs of stakeholders.

Facilitation: academic-clinical collaboration

In the JIGSAW project, knowledge flow and mobilisation took place within knowledge networks and an emerging CoP consisting of academics, practitioners, commissioners, and end users. The knowledge mobiliser was a key feature of the CoP. Many of the knowledge mobilisers in this study were clinicians and the results identify how individuals became knowledge mobilisers within their knowledge networks. These individuals with a shared incentive (to improve care for people with musculoskeletal conditions) came together (albeit with different perspectives) and formed a CoP with other knowledge mobilisers.

Findings of this study relating to collaborative working between academic and clinical organisations are consistent with other work reporting the benefits of practice networks and co-ordinated working in primary care (Pearson, 2019), as well as initiatives such as the Q Community¹⁷ that advocates peer support learning (Keck, 2018).

An early observation from the snowball sampling was that participants were repeatedly referring the candidate back to the IAU at Keele when identifying other influential people in the process. This observation, coupled with the findings relating to knowledge networks and brokers, suggests the importance of the academic-clinical collaboration. Cross-boundary working and cross-fertilisation of key individuals whose roles overlap an interface of knowledge networks were core components of KM. A variety of individuals existing in different knowledge spaces, who operated under different

¹⁷ The Q Community is a connected community working together to improve health and care quality across the UK. The initiative was developed by the Health Foundation

regulatory and professional boundaries, with different drivers and agendas, were reported to come together for an alternative reason, and KM took place as their knowledge networks overlapped. Often, within these knowledge networks KM occurred spontaneously, in an ad-hoc or informal manner. Figure 16 illustrates the multi-disciplinary nature, expertise and cross-boundary roles that exist within the IAU for the participants of this study.

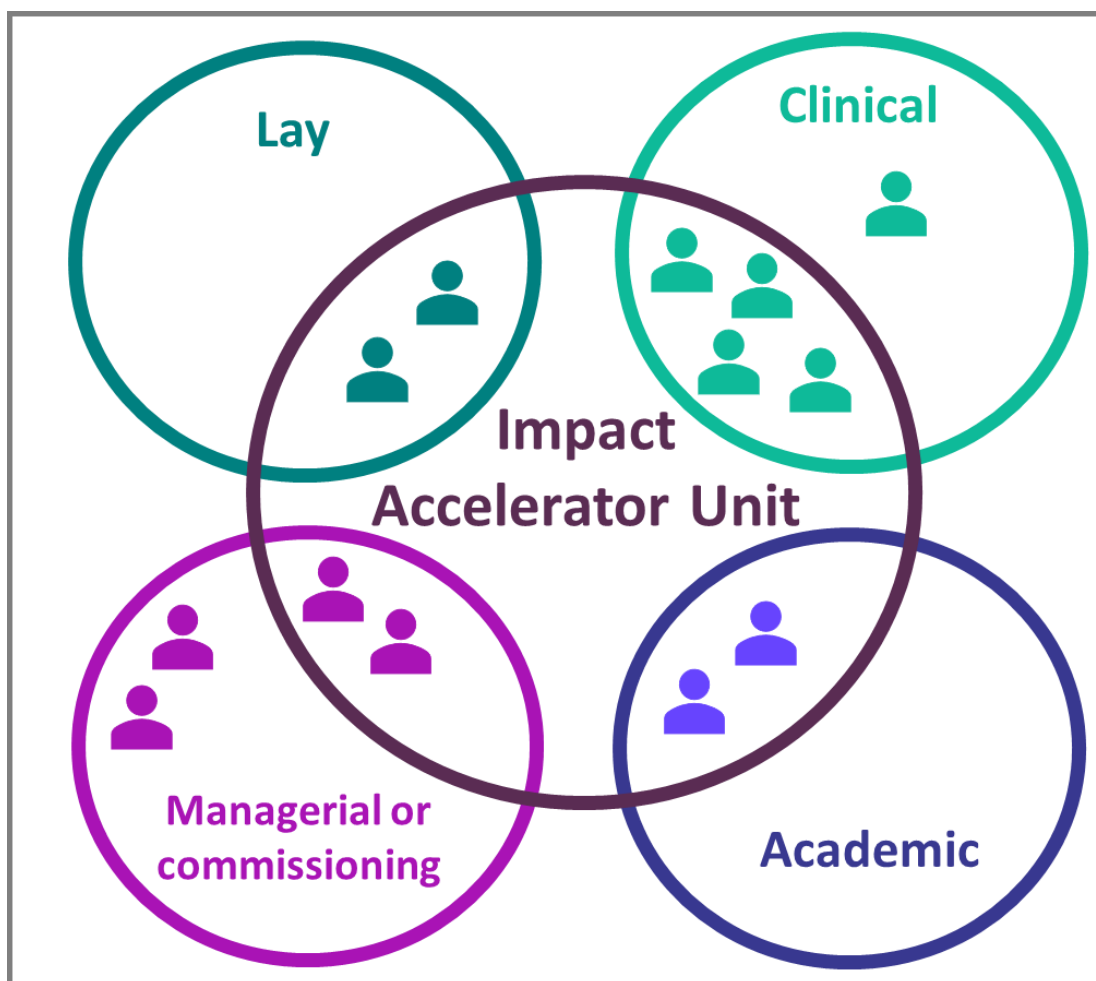


Figure 16 Multidisciplinary nature of participants interviewed and connections to the Keele Impact Accelerator Unit

A body of literature explores the partnerships between academic institutions and health service organisations as part of an evaluation of the NIHR funded Collaborations for Leadership in Applied Health Research and Care (CLAHRCs)¹⁸ (Rycroft-Malone et al., 2015, Soper et al., 2015, Lockett et al., 2014, Scarbrough et al., 2014). A recent systematic review synthesised the learning from the evaluation of the CLAHRCs and identified that evidence relating to KM within the CLAHRC partnerships was lacking (Kislov et al., 2018). The authors suggest that future work should focus on which KM approaches work, where, how and why. This chapter begins to address this evidence gap by advancing knowledge on the nature and extent of collaboration within the JIGSAW implementation project.

The model of academic-clinical collaboration seen in this study is one whereby the establishment and subsequent involvement of the academic institution developed alongside the process and transition between conducting the MOSAICS research study to the JIGSAW implementation project. The IAU started as a team of people, from a range of professional backgrounds, who were involved in both research and clinical practice. This evolved to become an active unit who are willing and able to occupy the space in-between research and real-world clinical practice and are able to span academic and clinical organisations to support KM. As such, it is different from the CLAHRCs which are collaborations between local providers of NHS services and NHS commissioners, universities and other relevant local organisations. The CLAHRC was a £144.8 million partnership established with identified strategic

¹⁸ The NIHR funded CLAHRCs were established in England between 2008 and 2014 to improve the quality of healthcare through the conduct and application of applied health research.

objectives and priorities to get evidence used in practice across large geographical areas of England. In contrast, the IAU, which started as a group of passionate people, evolved around the JIGSAW implementation project and when evidence was being pulled into practice, an infrastructure was required that supported this and developed in an attempt to keep up with the evolution of change.

Lessard et al. (2017) reported a model of academic-clinical collaboration (research practice partnership) as integral to reducing the 'second translation gap' due to the nature of continuing knowledge production and implementation in practice. However, despite this, recent work has shown that further evaluation of research and practice partnerships is warranted due to the lack of evidence on the impact of KM processes and practices adopted (Kislov et al., 2018).

The characteristics of the relationship between the IAU and general practice organisations and individuals in this study comprise co-production whereby the IAU team were working *with* practitioners rather than dictating *to* them. Reliance of some practices or individuals on the research institute was seen largely because clinicians did not have the time or potentially the skills to mobilise knowledge for implementation. They looked to knowledge mobilisers from the IAU as credible and able to help facilitate change. Peer to peer and practice to practice KM was beneficial for optimising buy-in in this study.

The discordance between academic and commissioning drivers and agendas raised important and sensitive issues that required careful consideration. The data revealed that the outcome measures collected as part of the MOSAICS research were of little relevance to commissioners which had implications for

the ongoing funding for the JIGSAW approach in one area. This prompted reflection on the disparity of academic agendas and, within KM, the importance of research not solely serving academic purposes, to accelerate uptake in general practice and enable scale up and scale out of the innovation. Collaboration and co-production are now more commonplace strategies suggested to be required if KM and evaluation are to be useful and meaningful (Kislov et al., 2018). Stakeholders are increasingly becoming involved in KM and are now looking at forming collaborative relationships where the end users of research (including patients or commissioners) identify potential research problems in conjunction with academia, to facilitate a two-way process.

These findings challenge the traditional 'push' and 'pull' model of KM which exists typically for academics, whereby research is 'pushed' to end users and its usefulness and uptake are assumed. Novel findings from this work include the strong connections identified in relation to the IAU and the ways in which the unit evolved to inadvertently play a central role in the implementation of JIGSAW by accessing networks through key individuals. The challenge remains as to how to get KM to be more forward facing, as the boundaries between research and implementation are likely to engender discontinuities in KM (Kislov, 2014).

Facilitation: the knowledge mobiliser

The knowledge mobilisers in this study were mainly individuals with boundary spanning roles including clinical champions, HCPs, commissioners, clinical academics and patients and the public. An extensive body of literature describes the development and conduct of explicit knowledge mobiliser roles such as researchers in residence, knowledge brokers and CoP facilitators (Marshall, 2014, Kislov et al., 2012, Lomas, 2007). Roles such as knowledge brokers are typically formalised roles, intended to bridge the gap between organisations, however conflicting literature on knowledge brokers exists (Scarborough et al., 2014). An ethnographic study conducted by Waring et al. (2014) concluded that a series of linked situations or opportunities facilitated knowledge sharing and recommended boundary spanning roles such as knowledge brokers as a strategy for optimising the process. Although this research was conducted in secondary care, similarities are seen in the contextual nature of sharing knowledge amongst clinicians. In contrast, Dobbins et al. (2009) yielded surprising results in an RCT that evaluated the effectiveness of three knowledge translation and exchange strategies. The findings showed that knowledge brokering did not appear to be effective in promoting evidence-based decision making. This may be attributed to the fact that the definition or enactment of knowledge brokering varies, and what was considered 'knowledge brokering' in the RCT did not comprise the effective ingredients required to enhance the process. This highlights the challenges of conducting an RCT in such a complex field and how important local contexts and mechanisms are in knowledge exchange strategies during KM in primary care.

Despite knowledge brokering roles being commonly seen as positive in overcoming boundaries, work by Kislov et al. (2017) describes several inherent challenges of the role including tensions between the different aspects of brokering, tensions between different types and sources of knowledge and tensions resulting from the nature of an 'in-between' position. The author illustrates some potential difficulties in explicit boundary spanning or bridging roles. Other studies have identified a lack of support and recognition for such roles at an organisational level and the sustainability of these roles has been questioned (Chew et al., 2013, Wright, 2013). An alternative body of literature refers to mechanisms for 'blurring' the gap between organisations which involves engaging people across professional and organisational boundaries.

The notion of blurring boundaries involves more integrative KM where people from different communities within the system, with an interest in the same topic or project (for example a service improvement project), build a community and legitimacy over time. These integrated or hybrid roles that facilitated the blurring of boundaries were seen in this study, for example: embedding an academic clinician in a service team; a GP partner with a commissioning role and therefore both a clinical and managerial perspective; a clinical or patient champion with a particular interest to drive implementation forward. These characteristics, which were evident throughout the data reported in this chapter, assist in enabling the capacity of the local system to draw in knowledge and are corroborated in a study by Scarbrough et al. (2014) who report blurring of boundaries occur when the emphasis was placed by CLAHRCs on the integration of research practices with practical concerns. Scarbrough et al. (2014) also suggested that a lack

of clarity of the nature of the knowledge broker role may limit their effectiveness which is in contrast to the results of this study which highlighted how the informality of knowledge mobilisers and ad-hoc conversations appeared to be central in mobilising knowledge and optimising implementation.

The findings presented in this chapter are slightly at odds with Kitson and Harvey (2016) who state that complex KM projects require facilitators who are experienced in implementation methods whereby the facilitator provides the strategic lead for the implementation project. Whilst participants report the necessity of understanding the local context and of being credible and trusted by peers, none of them spoke about the need to be experienced in implementation methods, nor were knowledge mobilisers responsible for coordinating the whole JIGSAW project.

The study identified how knowledge mobilisers may exist on a continuum from explicit awareness of the role to more implicit involvement in KM, and from professional to lay. This corroborates the definition of knowledge mobilisers by Ward (2017) who describes knowledge mobilisers as individuals with the skills and practical abilities to move knowledge into action. However, the findings of this study identified many credible, successful knowledge mobilisers who failed to identify that KM was a key feature of their role, despite their influence in mobilising knowledge for the successful implementation of the JIGSAW approach. This implies the possibility of an identity crisis for the role of the knowledge mobiliser, however, there was evidence to suggest that these individuals were still associated with effective KM, despite the lack of insight. Most of the participants in this study did not

have a specific designated knowledge brokering role, however, their engagement through other projects or forums meant that they did cross boundaries, provide links and share information and hence were incidental knowledge mobilisers.

The role of PPIE

Many of the participants in this study explicitly stated that PPIE was an important factor in KM, however except for in one general practice, there was little demonstrable evidence to show the impact of patient involvement in KM. Despite strong policy support, variation and challenges in enacting PPIE in practice are reported (Croft et al., 2016, Staniszewska et al., 2011). The need for greater evaluation of PPIE outcomes is widely recognised, yet, in a systematic review of studies evaluating NIHR funded clinical academic partnerships, CLAHRCs, Kislov et al. (2018) identified how none of the funded evaluations of CLAHRCs had an emphasis on PPIE. The authors also state how patients' views on PPIE differed from those of HCPs and advocated further investigation of the social processes and networks through which PPIE can contribute to healthcare improvement. This chapter has discussed how the U3A, a practice PPG, and a Lay Involvement in Knowledge Mobilisation (LINK) group have supported KM but questions regarding the structure and impact of these groups remain.

PPIE group discussion

An additional meeting with lay representatives from the LINK group at Keele was convened to aid the interpretation and analysis of data relating to PPIE in KM that emerged as a cross-cutting theme in the interviews. The discussion identified how the IAU have developed bespoke structures and processes for PPIE in KM. The LINK group was reported to have evolved from within the IAU and the representatives described how they felt incredibly valued from the close collaborative working that takes place. Central shared leadership was an important factor of PPIE in the IAU. The group described a cohesive

and supportive environment which enabled skills development through training, regular communication, and a team approach where staff and lay representatives work collaboratively and not as separate entities.

One representative spoke about how the support from the LINK group and IAU enabled them to gain the confidence to flourish and feel a central part in large projects. All representatives agreed that their decisions make a definite impact on KM. The group also spoke about previous involvement in research in other areas or departments and how they've not been involved in all stages. This was described as feeling like a peripheral 'tick box exercise', whereas their experience of the LINK group was one that fosters a culture of collaboration and shared decision making that had value and impact. The excerpt below is from an email received from one of the LINK group members (reproduced with their consent).

The bond between the patient and professional at Keele is very strong. Keele has a very good record of involving the public in research, for instance, the LINK has a unique opportunity to view/discuss implementation projects at the development stage to comment/advise on content that could be helpful to the developer. Patients know that their views will be listened to by the professionals and the professionals know that those patients are dedicated to helping to get better outcomes

Many of the factors discussed in the PPIE meeting such as the importance of institutional leadership, the creation of robust infrastructure, working methods and roles and relationships are supported by Jinks et al. (2016) in a paper that described the sustainability of PPIE in research at the Research

Institute at Keele University. Whilst the emphasis of this paper is on the role of PPIE in research, findings from this chapter suggest that the same may apply for PPIE in KM. Effective partnerships are reported to have ensured the experiences of the group members were valuable in KM. PPIE within the IAU for this study was authentic and was reported to be a central component of facilitation within the academic-clinical collaboration because patients and the public were embedded in the IAU. However, the legitimacy of PPIE within PPGs is less clear.

Croft et al. (2016) describe the variation of managerial influence on PPIE in commissioning organisations, ranging from PPIE that is driven by managerial priorities and agendas to managerial involvement that enhances PPIE by normative control bolstering collaboration. There was little evidence in the interview data reported in this chapter that PPIE was driven by managerial priorities, however, this warrants further exploration. Uncertainty exists as to the role and remit of those setting the LINK group agenda or whether the group functions autonomously. This relates to comments from the stakeholder advisory group (reported in Chapter 3) regarding who decides what research to implement. A more detailed understanding of the structures and processes of the LINK group and PPGs may be useful in identifying the full extent to which patients and the public have an impact in KM. Further work is needed to enhance understanding regarding the key actors who drive decision making and influence implementation and the extent to which PPIE and PPG involvement is either tokenistic or meaningful in KM.

7.4.3 Strengths and limitations

Methodologically this study has several key strengths. The use of qualitative semi-structured interviews allowed the candidate to gain insight into individual experiences of KM from a range of perspectives. This enabled in-depth exploration of the issues and challenges faced by stakeholders. The richness of their dialogue provided insight into what went well or not so well from their perspective and the implications of the experience. Thirteen participants were interviewed, and the sample represented key individuals involved in the process, therefore, accessing different professional and lay perspectives. Furthermore, theoretical saturation was achieved (Coyne, 1997). This work involved representation from the worlds of primary care, commissioning and academia, therefore, a deeper insight into the real-world impact of KM was achieved.

A pilot interview was conducted to reflect on and refine the initial topic guide. Following this, a bespoke topic guide was developed for each interview based on emergent findings and considering the professional discipline of the participant. However, a flexible agenda was maintained and the candidate was open to the interviews uncovering ideas that had not previously been considered (Britten, 1995). The rich detail which emerged from the analysis provided illuminating insights into the experiences of KM for OA in primary care, an area which has been scarce in the literature, and unique perspectives and experiences pertaining to the research aims were gleaned.

The candidate was also responsive to the impact of the sampling method and the data being collected which is suggested to enhance rigor (Morse et al., 2002). As a result of this, towards the end of data collection, snowball

sampling was supplemented with a purposive approach to identify a broad range of individuals and experiences, test ongoing interpretations and further examine anomalous responses, consider emergent themes from the initial interviews, and adapt to the diversity of participants accessed via snowball sampling. Another strength was the use of the i-PARIHS framework as a deductive framework to supplement the inductive thematic analysis which helped to identify mechanisms for KM in this study.

Accessing data from a commissioning perspective is a unique component of this study given the relative paucity of empirical studies researching commissioning views, particularly regarding KM in primary care. Critical reflection on this data prompted in-depth consideration and interrogation of findings that yielded valuable insights for this work. Despite this, unfortunately, the voice of one professional group is absent in this study, practice managers. Including lay members with the data analysis provided an opportunity to ensure openness and transparency of the data analysis with a focus on PPIE.

The collective views of practices and individuals that were not implementing JIGSAW were underrepresented and as a result, the data presented in this account may offer a biased view of barriers and facilitators. However, negative cases were sought from the snowball sampling; two of the non-respondents were from a practice where implementation 'struggled'. The fact that these individuals did not agree to be interviewed may be reflective of the culture in the practice, contextual pressures and/or their attitudes towards implementing new ways of working. In addition, several participants

spoke of attempting to mobilise knowledge in less receptive practices and described the challenges experienced.

Whilst conducting some of the interviews over the telephone ensured valuable data from time-pressured individuals were captured, this method posed challenges for the candidate in terms of developing rapport and clarification of points that were enabled with a face to face approach (Bowling, 2009, Sturges and Hanrahan, 2004). However, this demonstrates the difficulty of conducting research in primary care and recruiting individuals and highlights the imperative for researchers to recognise the demands on, and, address the needs of general practice to facilitate engagement.

Not conducting observations may be regarded as a limitation of this study as it is suggested that there is a possibility of interviewees reporting what they think the interviewer wants to hear and the researcher not obtaining a first-hand experience of the phenomena under investigation (Creswell, 2009). However, at the time point in which the study was conducted, there were no processes or meetings that warranted observation to address the research aims and therefore, it was judged not feasible or beneficial.

The insider/outsider status of the researcher is commonly debated in the literature (Marshall and Edgley, 2015, Creswell, 2009). It is possible that the participants saw the interviewer (candidate) as a member of the original research team and their perceived role in ongoing clinical academic projects and partnerships may have influenced the findings. Participants may not have opened up to the candidate and expressed all of their views due to the candidate's role within the JIGSAW team. However, there was evidence within the data that refutes this possibility whereby participants reported

both positive and negative experiences. To mitigate this risk, the candidate introduced themselves to participants as a Ph.D. candidate to ensure their role was perceived as a researcher and not a member of IAU or physiotherapist (Fink, 2000). In addition, the findings relating to the academic-clinical collaboration emerged relatively late in the analysis process. This may be because the candidate was working within the IAU as part of this collaboration and may have identified this more easily as an outsider to the project and team.

7.4.4 Development of a conceptual model

This study showed how the context of organisational systems stymies cross-boundary working. However, a novel finding was the way in which facilitation, in the form of clinical-academic collaboration and knowledge mobilisers (including patients), mediated internal and external context to engender change. Harvey and Kitson (2016) describe facilitation as an active ingredient whereby 'the ability of the facilitator and the facilitation process to enable recipients within their particular context to adopt and apply the innovation by tailoring their intervention appropriately' (p6). In this study, facilitation enabled organisations and individuals to respond positively to external and internal contextual issues and drivers for successful implementation.

The findings from this chapter build upon the i-PARIHS conceptualisation of facilitation in several ways by identifying more specific detail regarding (i) knowledge networks and the importance of clinical-academic collaboration¹⁹, (ii) the ways in which tacit facilitation may be needed in addition to an explicit facilitator for successful KM, and, (iii) the potential role that patients and the public play in facilitating the process. The findings have also demonstrated how the construct of facilitation works in practice within the JIGSAW implementation project.

The general practice organisations and individuals that were reported to engage with external networks appeared to be more likely to mobilise knowledge. Collaboration between academic and clinical organisations and the presence of knowledge mobilisers and knowledge networks were seen to

¹⁹ Clinical-academic collaboration also relates to and describes the context construct of the i-PARIHS framework

mediate and mitigate the contextual pressures faced by organisations and the individuals working within them. Embedded within the academic-clinical collaboration was the involvement of patients and the public who also contributed to the facilitation of KM in some circumstances.

These findings contribute to understanding of the facilitation construct of the i-PARIHS framework are represented schematically in Figure 17.



Figure 17 Conceptual model of the role of facilitation in knowledge mobilisation in general practice

7.5 Conclusion

This chapter has presented the empirical results of an interview study conducted with key stakeholders involved in the JIGSAW implementation project. A detailed account of the practical implications and evidence-based 'lessons learnt' from the JIGSAW implementation project has been given. Methodological considerations have been reflected upon and limitations of the study have been acknowledged; recognising opportunities to broaden the knowledge generated by this study.

This study has identified unique insights into how academic-clinical collaboration and collaboration through knowledge networks were essential components of KM in primary care. Involving an academic institution with certain characteristics was shown to enhance KM and PPIE appeared to be important in facilitating the process in some examples. This suggests that successful implementation in primary care may need to be led, driven and facilitated by a network of individuals who are dedicated to a KM approach. The benefits of a collegiate culture (in general practice) and the social processes and networks through which PPIE can contribute to healthcare have been shown. Considering the i-PARIHS framework, this work has built upon and developed understanding relating to the facilitation and context domains and a conceptual model depicting the role of facilitation has been presented. Important considerations relating to researcher reflexivity have been discussed and the implications of these on the thesis described.

The following chapter describes the triangulation process used to determine the key empirical findings identified in this thesis thus far to inform a toolkit for optimising KM in OA primary care.

Chapter 8: Development of a toolkit for KM in primary care: qualitative data triangulation

8.1 Introduction

Previous chapters have presented a summary of the existing qualitative literature relating to the factors that influence KM in the field of OA in primary care (Chapter 4) along with empirical data relating to KM at the transition between research and real-world implementation (Chapter 6) and understanding uptake of interventions in primary care (Chapter 7). This chapter details the results of a triangulation protocol and brings together the findings of the thesis data sets which have been analysed in three separate analyses (reported in Chapters 4, 6 and 7). Each data set on its own provides evidence to address the thesis aims, but together they have the potential to contribute to a higher level of analysis and a broader understanding of the research questions. In triangulating the findings from different methodological approaches which access different elements of implementation in primary care, complementary findings can contribute to a more complete picture of the phenomena of KM in this unique setting.

The background and rationale for conducting a triangulation protocol is firstly presented, followed by an overview of the methods. The results section provides a detailed account of convergence coding (step 2), iterative checking and subsequent interpretative analysis (step 3), and the development of a typology and draft recommendations (step 4) from the triangulation protocol²⁰. The chapter goes on to summarise and discuss the main findings, including the strengths and limitations. Finally, the chapter conclusions are presented.

²⁰ Step 1 is summarised textually in section 8.4 (Results) and presented in detail in Appendix 11

8.2 Background and rationale

Data analysis has been described as the most important component of the qualitative research process (Leech and Onwuegbuzie, 2007). Providing a robust and transparent audit trail of the analysis process can enhance the trustworthiness of the findings (Spencer and Ritchie, 2002). The inherent richness of the qualitative data collected thus far in the thesis provides multi-layered evidence and describes the complexity of factors affecting KM in primary care (Miles and Huberman, 1994). The importance of eliciting lived experiences along with the barriers and enablers at play during KM lies in the potential to provide answers to questions regarding the evidence to practice gap in musculoskeletal primary care, and to better understand the process of implementing best practice research.

To inform the development of a toolkit to optimise KM for OA in primary care, and to ensure quality and strengthen internal validity, the amalgamation of the empirical data from chapters 4, 6 and 7 was undertaken (Meijer et al., 2002). This included focus group data from 21 HCPs, interview data from 13 individuals, including HCPs, managers, commissioners and lay representatives, and the systematic review data that evaluated the perceptions of HCPs and patients across four studies using qualitative methods. Each of these data sets illuminates different factors that influence KM in primary care, from the perspectives of key stakeholders at different time points in the implementation process. By focussing on different perspectives in time from a range of stakeholders, these data sets provide a

comprehensive picture of the experiences of mobilising musculoskeletal evidence into primary care practice²¹.

A triangulation protocol was used to integrate the data from this thesis pertaining to the phenomena of KM for implementation (Tonkin-Crine et al., 2015). The aim of the triangulation protocol was to (i) integrate the findings generated from the empirical work of the thesis, (ii) ascertain the level of convergence from the findings identified, and (iii) develop a typology and draft recommendations as a starting point in the development of a toolkit to optimise KM for OA in primary care.

8.3 Overview of methods

A triangulation protocol based on the principles of Farmer et al. (2006), was used to integrate the findings of the three data sets after they had been individually analysed to identify whether data agree (convergence), contradict (dissonance) or complement each other (Meijer et al., 2002). This provided a structured approach to triangulation and helped to ensure the process was transparent and replicable. A detailed description of the study methods is provided in Chapter 5 (section 5.7.1).

In step one of the triangulation protocol, key findings were identified from the three data sets, along with supporting quotes. The three data sets were: (i) findings from the systematic review and thematic synthesis, (ii) findings

²¹ To clarify, the focus group data were collected within the context of the MOSAICS study, three of the four papers included in the systematic review included data from the MOSAICS study, and the interview data is set in the context of the JIGSAW implementation project which started after the MOSAICS trial was completed.

from the focus group analysis, and (iii) findings from the individual interviews.

Following this, any duplicate finding statements were removed, and convergence coding completed to identify the instances of agreement, partial agreement, dissonance and silence of the key findings between each data set (step 2). A process of iterative checking then took place whereby the candidate examined the instances of complete agreements (across all three data sets) and any dissonances and silences, by going back to the original data sets and completing further analysis (step 3). Partial agreements were not examined critically due to repetition with previous data analysis. These were then organised and refined into a typology before being written as draft recommendation statements (step 4). The draft recommendation statements were presented at a National KM conference as part of a stakeholder engagement consensus exercise (step 5 – presented in Chapter 9).

The modified approach adopted in this thesis differs to that of Farmer et al. (2006) in several ways. First, rather than a six-step process which separates the review of the coded findings between researchers as a distinct step, the study reported in this chapter combined this step within convergence coding, therefore conducting the same processes in a five-step protocol. Second, in contrast to Farmer et al. (2006), this study did not identify the frequency of key findings amongst each data set as 'complete agreements' were considered to provide sufficient evidence of data strength. Finally, rather than sorting data into similarly categorised segments or overarching themes, the decision was made in this study to sort individual key findings from each data set and not overarching themes, to mitigate the risk of losing the meaning

and nuances of the rich data within each data set. This enabled a detailed examination of the data throughout the process whereby the contextualised nature of each individual finding was maintained, and close attention was paid to each key finding throughout the process so that subtleties were not lost in the early stages by the themes being too broad.

8.4 Results

In step 1 of the triangulation protocol, 95 key findings were identified from the three data sets. These are presented in Appendix 11 along with supporting quotes. 42 finding statements were removed through repetition or duplication, leaving 53 distinct key findings for convergence coding (step 2). Following iterative checking (step 3), these were then organised and refined into a typology before being written as draft recommendation statements (step 4). Figure 18 illustrates the triangulation process.

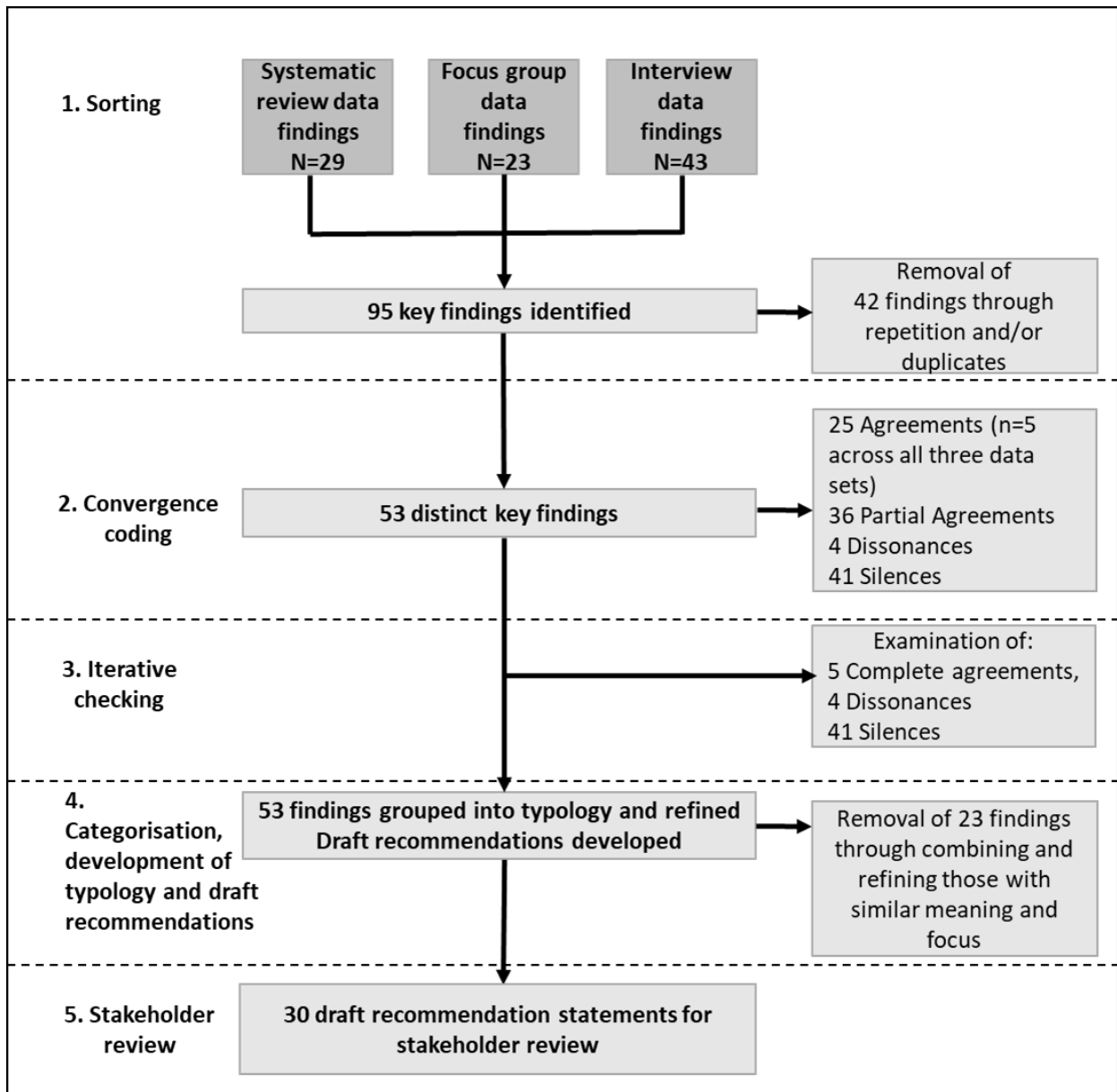


Figure 18 Flowchart of the triangulation process

8.4.1 Convergence coding (step 2)

Table 10 presents step 2 of the triangulation protocol, the convergence coding of the 53 distinct key findings from the three datasets. The 53 findings are listed, alongside the originator dataset. Taking the first finding for example – ‘HCPs valued protected, dedicated time for whole practice CPD/discussion because it provided time and headspace for implementation planning’, the originator dataset was the focus group findings. This finding partially agreed with findings from the interviews (indicated under ‘partial agreement’ as FG vs I) but not found in the systematic review data, reported under the column silence, ‘FG vs SR’.

Table 10 Convergence coding results

Data set	Finding	Agreement	Partial agreement	Dissonance	Silence
FG	HCPs valued protected, dedicated time for whole practice CPD/discussion because it provided time and headspace for implementation planning (key finding 9)		FG Vs I		FG Vs SR
	HCPs valued protected, dedicated time for whole practice CPD/discussion because the whole practice approach ensured that consistent messages were delivered by all staff (key finding 10)				FG Vs I FG Vs SR
	HCPs valued protected, dedicated time for whole practice CPD/discussion because it enabled local contextual factors to be considered (key finding 11)		FG Vs SR		FG Vs I
	HCPs reported valuing the opportunities for feedback and reflection while receiving training. This facilitated behaviour change and the transition of knowledge to practice (key finding 4)				FG Vs I FG Vs SR
	HCPs reported how support and training in consultation skills facilitated a change in their knowledge, confidence and practice (key finding 2)		FG Vs SR		FG Vs I

FG-Focus group data; I-Interview data; SR-Systematic review data

Table 10 continued over page

Data set	Finding	Agreement	Partial	Dissonance	Silence
FG	HCPs reported engagement with implementation because of positive experiences in delivering the intervention (key finding 5)	FG Vs SR	FG Vs I		
	The intervention changed clinicians' approaches from biomedical to a more holistic, self-management approach (key finding 6)	FG Vs SR	FG Vs I		
	Flexible interventions were seen to facilitate implementation, particularly who delivered the intervention, when/where/how (key finding 32)	FG Vs I			FG Vs SR
	HCPs valued the opportunity to expand their role to implement and deliver the intervention because it was seen to enhance their professional autonomy by enabling them to manage patients with joint pain without referring patients back to the GP (key finding 34)	FG Vs I FG Vs SR			
	The reduction in workload for GPs was a motivating factor for implementation. HCPs did not want to implement an intervention that would increase their workload (key finding 46)	FG Vs I FG Vs SR			

FG-Focus group data; I-Interview data; SR-Systematic review data

Table 10 continued over page

Data set	Finding	Agreement	Partial	Dissonance	Silence
FG	Implementation was perceived as not onerous because it required minimal system level change because it did not require extra clinics, structural change, or increased time of time of consultations (key finding 44)	FG Vs SR	FG Vs I		
	HCPs reported valuing the support provided by the research team in guiding implementation (including technical issues with template/installing, providing guidebooks, training) (key finding 13)	FG Vs I			FG Vs SR
	Alignment of interventions with policy and culture of the management of LTCs and multi-morbidity facilitated implementation because it was recognised as important and provided clinicians with transferrable skills (key finding 38)	FG Vs I	FG vs SR		
	HCPs reported engagement with implementation of an intervention that aligned with holistic care (key finding 35)	FG Vs SR	FG Vs I		
	A range of different types and formats of knowledge, including guidelines, experience, tacit knowledge and case stories are given priority by stakeholders and influenced adoption of the intervention (key finding 1)	FG Vs I	FG Vs SR		

Data set	Finding	Agreement	Partial	Dissonance	Silence
FG	The desire/drive towards quality improvement influenced engagement of HCPs with implementation (key finding 36)		FG Vs I		FG Vs SR
	Patient preferences influenced implementation (key finding 40)	FG Vs SR	FG Vs I		
	You can improve patient care but not endlessly, (quote - its general practice and not target practice) (key finding 51)		FG Vs I		FG Vs SR
	Implementation of interventions for OA were often seen as low priority (key finding 52)	FG Vs I FG Vs SR			
I	Implementation could only be considered if no additional resource was needed. Funding helped to facilitate implementation in some practices but was insufficient in helping others (key finding 53)		I Vs FG		I Vs SR
	HCPs reported the inability to be proactive towards implementation due to immense pressure faced working in primary care meaning that there is not enough time to plan (key finding 26)		I Vs FG		I Vs SR

FG-Focus group data; I-Interview data; SR-Systematic review data

Table 10 continued over page

Data set	Finding	Agreement	Partial	Dissonance	Silence
I	Clinicians described a need for 'head space' to enable time to stop and think about the evidence base to ensure the best services are being provided (key finding 7)		I Vs FG		I Vs SR
	Implementation was suggested by participants to have the potential to disrupt equipoise/balance within a practice because doing more for one condition or group of patients was perceived to have the potential to detrimentally affect others (key finding 21)	I Vs FG I Vs SR			
	The notion of change fatigue was perceived to influence implementation by disengaging HCPs who are working under immense pressure and do not feel able to implement new interventions (key finding 20)				I Vs FG I Vs SR
	Different stakeholders have different priorities for example commissioners give priority to cost saving, GPs- reduce consultations/quality improvement. Participants report how implementation of an intervention that provides no financial savings is seen as a low priority to GPs and commissioners. This can make implementation challenging (key finding 50)		I Vs FG I Vs SR		

FG-Focus group data; I-Interview data; SR-Systematic review data

Table 10 continued over page

Data set	Finding	Agreement	Partial	Dissonance	Silence
I	Implementation was seen as 'bottom up' (in some practices) and driven by front line staff rather than being imposed by managers (key finding 15)		I Vs SR		I Vs FG
	Policy and the regulatory environment affected implementation both positively and negatively for example QOF influenced practice staffs' views of what was a priority. The need to adhere with NICE guidance alone was not a motivator, in the absence of other drivers e.g. CQC target or QOF, however NICE guidelines could be turned to a motivator when coupled with CQC target (key finding 39)		I Vs FG I Vs SR		
	Practices tend to work in isolation- interviewees speculated that working more collaboratively in small networks would facilitate implementation (key finding 25)	I Vs FG			I Vs SR
	Participants reported huge variation in the role of the practice nurse in primary care due to the nature of GPs being run as small businesses. Practice nurses were reported to work with differing levels of autonomy and their engagement in implementation planning was variable; In some practices, practice nurses were central to driving forwards implementation (key finding 24)		I Vs FG I Vs SR		

FG-Focus group data; I-Interview data; SR-Systematic review data

Table 10 continued over page

Data set	Finding	Agreement	Partial	Dissonance	Silence
I	Clinicians perceived the societal views of OA to require a biomedical approach to treatment to be a barrier to implementation (key finding 41)		I Vs SR	I Vs FG	
	Patient participation groups (PPGs) were perceived as powerful in driving change in primary care practices (key finding 42)				I Vs FG I Vs SR
	Participants report the culture and leadership (including practice manager) within a general practice influences engagement with implementation. Power dynamics in practices influenced uptake of implementation, with some examples where one individual could block or facilitate involvement (key finding 19)	I Vs SR	I Vs FG		
	Participants report how the staffing model and staff turnover of a general practice influenced HCPs attitudes/engagement towards implementation and the extent to which staff has a vested interest in practice performance influenced engagement (key finding 23)	I Vs FG	I Vs SR		

FG-Focus group data; I-Interview data; SR-Systematic review data

Table 10 continued over page

Data set	Finding	Agreement	Partial	Dissonance	Silence	
I	Individual interest in quality improvement and the condition/disease was reported to be a motivating factor for engaging with implementation (key finding 47)		I Vs FG		I Vs SR	
	Characteristics and needs of a practices' local population influenced engagement with implementation for example physical mobility was an important factor in an ageing rural population (key finding 22)		I Vs FG		I Vs SR	
	Patient involvement was reported to be essential in achieving successful implementation in one practice (key finding 31)				I Vs FG I Vs SR	
	Participants reported the knowledge mobiliser to be an essential role in implementation in primary care (including the support from Keele IAU) (key finding 17)			I Vs FG		I Vs SR
	Participants expressed uncertainty as to whose role it is to mobilise knowledge for implementation some participants viewed it as everybody's role, some viewed it as senior person such as manager (key finding 16)					I Vs FG I Vs SR

FG-Focus group data; I-Interview data; SR-Systematic review data

Table 10 continued over page

Data set	Finding	Agreement	Partial	Dissonance	Silence
I	Some participants reported a desire to make the knowledge mobiliser role formal for example with a specific job specification (key finding 18)				I Vs FG I Vs SR
	The skill set of the knowledge mobiliser was essential to implementation (key finding 14)				I Vs FG I Vs SR
	The affiliation to multiple networks was reported to be beneficial in optimising implementation because it was seen to speed up implementation and overcome barriers. This also gave implementers confidence in implementation because the wider team added credibility to the venture (key finding 12)				I Vs FG I Vs SR
	Participants reported how implementation was optimised if they received knowledge from a trusted, credible source (often with their peer network) (key finding 8)	I Vs FG			I Vs SR
	Many participants preferred face to face mobilisation of knowledge, with concise messages/sell points (key finding 3)		I Vs FG		I Vs SR

FG-Focus group data; I-Interview data; SR-Systematic review data

Table 10 continued over page

Data set	Finding	Agreement	Partial	Dissonance	Silence
I	Evaluation needs to be tailored to key stakeholder drivers and priorities. Evaluation outcomes need to be planned at the start of the implementation journey and relevant to all stakeholders (key finding 27)	I Vs SR			I Vs FG
	The collection of relevant outcome and evaluation data is challenging because of NHS systems and hard to measure outcomes (key finding 28)		I Vs SR		I Vs FG
	Evaluation identified how the support of the research team was essential in initiating and maintaining implementation and routinisation of the intervention. Some participants report how implementation ceased when the support of the research team was withdrawn (key finding 29)				I Vs FG I Vs SR
SR	Individual clinician's motivators influenced engagement with implementation for example CPD or personal appraisal (key finding 45)		SR Vs FG SR Vs I		
	HCPs reported engagement with implementation because the intervention was perceived to enhance consistency but also gave more treatment options and the content for explanations based on evidence (key finding 48)	SR Vs FG	SR Vs I		

Data set	Finding	Agreement	Partial	Dissonance	Silence
SR	GPs and practice nurses differed in their desire to close off the consultation (vehicle to dispose of patients and shift responsibility) or to provide a foundation for future consultations. Implementation of the intervention facilitated both of these. (key finding 49)		SR Vs FG SR Vs I		
	GPs valued strategies and opportunities to legitimise patients concerns and give reassurance to patients regarding joint pain (key finding 37)	SR Vs FG SR Vs I			
	Implementation was optimised if the intervention aligned with patient and/or clinician preferences for self-management. The intervention was not seen to make sense to some GPs who perceived that they had a limited role in self-management (key finding 33)			SR Vs FG SR Vs I	
	GPs reported assumptions about patient preferences, assuming that the intervention placed an extra treatment burden on patients (key finding 43)				SR Vs FG SR Vs I
	HCPs and researchers report consistency in mobilising knowledge to all staff within a general practice as a challenge. HCPs reported an ad-hoc/pick and mix style of implementation following individual reflection and evaluation (key finding 30)		SR Vs I	SR Vs FG	

8.4.2 Iterative checking and interpretative analysis (step 3)

The following section presents the iterative checking and subsequent interpretative analysis of the triangulation protocol convergence coding. Instances of complete agreement between all three datasets are first described as they may represent the strength of a finding. This is followed by the critical examination of the instances of dissonance and silence captured in the analysis. This leads on to the next section (Development of a typology and draft recommendation statements – step 4) with the key findings presented in Table 11.

Instance of complete agreement between the three data sets

There were five instances of complete agreement between all three datasets (key findings 21, 34, 37, 46 and 52)²² and most of these relate to how the pressures and demands faced in primary care impact on KM for implementation. One finding that was reported in all three data sets was that the implementation of interventions for OA was perceived as a low priority by HCPs (key finding 52) which has been identified consistently throughout this thesis and in the literature. This posed a challenge for knowledge mobilisers and again highlights the societal view that 'there's nothing that can be done for OA', and how conditions associated with financial reward or tariffs are more likely to be prioritised in general practice. The key finding that the implementation of interventions for OA had the potential to disrupt the equipoise or balance within a practice because doing more for one condition or group of patients was perceived to have the potential to detrimentally affect others (key finding 21), was also identified in every data

²² Please refer to the next table (Table 11) for the numbered key findings

set. It was not clear from the data whether *any* new model of care or intervention has the potential to upset practice equipoise, or if there is something specific about interventions for OA, the perceptions of the disease, and how it presents that affects this. HCPs did not want to implement an intervention that would increase their workload (key finding 46) which is not surprising given the challenges associated with capacity in general practice. Furthermore, a motivating factor for implementation of interventions for OA across the data sets was the reduction in workload for GPs (key finding 46). These findings demonstrate how the multitude of demands on primary care practices affect KM and highlight the need for knowledge mobilisers to carefully consider the capacity of general practices to adopt new models of care.

Other consistent findings across the three data sets relate to how clinicians perceived the potential benefits of implementing interventions for OA. A key finding was that practice nurses and healthy lifestyle advisors valued the opportunity to expand their role to implement and deliver interventions for OA because it was seen to enhance their professional autonomy by enabling them to manage patients with joint pain without referring them back to the GP (key finding 34). GPs, on the other hand, valued strategies and opportunities to legitimise patients' concerns and give positive, reassuring messages to patients regarding joint pain (key finding 37). Therefore, the perceived benefit of implementing the interventions for OA for clinicians was that it provided them with additional management options in clinical consultations.

Instances of dissonance

There were four instances of dissonance identified in the convergence coding which related to three key findings (key finding 30, 33 and 41). In the systematic review findings, consistency in mobilising knowledge to all staff within a general practice was a challenge for knowledge mobilisers which resulted in clinicians adopting an 'ad-hoc' style of implementation to suit their needs and preferences (key finding 30). The dissonance of this key finding with the focus group data was identified. A possible explanation for this is that the practices that took part in the focus groups had all attended whole practice training sessions as part of the original MOSAICS research²³. Therefore, the design of the research and associated funding to conduct focus groups helped to circumnavigate this potential implementation challenge and may explain the dissonance identified. The ad-hoc implementation, however, may be reflective of real-world practice and how innovations are adapted to suit local and individual circumstances.

Key findings 33 and 41 were associated with interrelated issues surrounding the views and approaches towards self-management for OA. A key finding from the interview data was that clinicians perceived the societal views of OA to require a biomedical approach to treatment to be a barrier to implementation (key finding 41). Clinicians perceived that some patients may not want a self-management approach if it doesn't align with their beliefs, preferences and their construct of OA. However, findings from the focus group illustrated that clinicians' perspectives on the biomedical approach for OA could and did change as a result of the training provided and this had a positive effect on implementation. Thus, the key difference in these findings

²³ For an overview of the MOSAICS study see Chapter 1 (section 1.5) and Appendix 1

was the extent to which health beliefs about OA were perceived as modifiable, with the focus group data suggesting that being able to modify these beliefs in clinicians was a key ingredient in the 'success' of implementation. Another factor that may explain these findings is the differences in the data sets as the focus group data were collected in the context of a research implementation trial where clinicians' perspectives may shift as a result of the intervention and related information provided. Whereas, the interview data sought to ascertain the experiences and perceptions of individuals, with no precursor or reason for these to shift. The different aims and research questions may explain the dissonance. There was no evidence within the data to show that the intervention successfully shifted patient views for example from seeking surgical management of their OA joint to self-managing through exercise.

In the findings from the systematic review, implementation was optimised if the intervention aligned with the patient and/or clinician preferences for self-management (key finding 33). The data illustrated tensions, reported by GPs, in implementing an innovation that conflicted with patient expectations or failed to align to what they described as patient *agendas*.

The intervention was seen to not make sense to some GPs who perceived that they had a limited role in self-management. This differs from the findings from both the focus group and interview data whereby the intervention was seen to make sense to all participants. In the focus groups, the intervention did align to clinician preferences for self-management. However, the focus group data were collected after the training which shifted the preferences of some clinicians from a biomedical approach of managing joint pain (such as

referral to an orthopaedic surgeon) towards a more holistic self-management approach (such as promoting exercise and use of analgesia). Whereas, in the interviews, some participants expressed the view that all clinicians have a role in promoting self-management. This highlights the subtle differences in findings depending on who is involved in the original research (trial) and subsequent implementation, as well as who was interviewed. These findings illustrate the range of preferences regarding self-management and the impact these have on KM and implementation efforts. The findings led to important recommendations for the stakeholder engagement exercise regarding demonstrating the benefits of an innovation to patients and ensuring the inclusion of patient and public involvement to understand and manage patient expectations.

Instances of silence

Within the convergence coding, 41 silences were identified relating to 30 of the key findings. For each 'silence', the data were examined to identify if this was explained by differences in the data sets. These silences are considered, with possible explanations, below.

Some of the more easily explained silences relate to the differing focus of each research question, context and/or time point for data collection within the three data sets. For example, one of the overarching findings from the focus group data was that HCPs valued protected, dedicated time for whole practice discussion, feedback, and reflection during the training (key findings 4, 7, 9 and 10). This data were collected immediately after the delivery of training for implementation. The same finding was not reported in the interview data and this is likely to be because the participants were

interviewed several months or even years after the training, and the training was also not the focus of the research question. The key findings regarding the whole practice approach in the focus group data are reflective of the time point for data collection whereby practices involved were at the transition between the MOSAICS research study and planning implementation to suit their local contextual circumstances (Key finding 11). Similarly, other silences that could be explained by differences in the data sets related to the training and support received by the focus group participants include key findings 2 and 13.

Linked to this is key finding 29 from the interview data that identified how the support of the research team was essential in initiating and maintaining implementation and routinisation of the intervention. Some of the interview participants reported how implementation ceased when the support of the research team was withdrawn. This data were only accessible because the interviews were focussing on a process that, for some practices, had taken place several years prior to being interviewed and so were able to reflect on the process. Similarly, this was not identified in the systematic review data because of the time point of data collection in the original studies.

Two key findings relating to evaluation were not identified in the focus group data. Firstly, the collection of relevant outcome and evaluation data was challenging because of NHS systems and hard to measure outcomes (key finding 28), and secondly, evaluation needs to be tailored to key stakeholder drivers and priorities and evaluation outcomes need to be planned at the start of the implementation journey and be relevant to all stakeholders (key finding 27). These may also be explained by the collection of focus group data at the

start of the implementation process whereby evaluation was not a priority to participants at that time and they were not yet considering or collecting data for evaluation purposes.

Participants in the focus group highlighted how consideration of balancing a range of priorities within a general practice was required when considering implementation, 'you can improve patient care but not endlessly' (key finding 51). This was not identified in the systematic review, possibly because most of the studies were conducted as part of a funded research trial and participants may not have reported 'real-world' pressures of implementation whilst they had a vested interest in the study.

Several factors related to the notion of KM were identified in the interview data and silent in the other data sets. Firstly, the role of the knowledge mobiliser. Participants reported the skill set of the knowledge mobiliser to be important (key finding 14), along with uncertainty as to whose role it was to mobilise knowledge from research to practice, and the lack of awareness, by participants who had been pivotal in mobilising knowledge, that KM was part of their role (key findings 15, 16, 17 and 18). Secondly, the approach to KM whereby many participants preferred face to face mobilisation of knowledge, with concise messages and sell points (key finding 3) and that implementation was optimised if they received knowledge from a trusted, credible source (often from within their peer network) (key finding 8). Finally, for both individuals and general practices, working collaboratively within networks was suggested to facilitate implementation (key findings 12 and 25). All of these could be explained by the focus on the KM process in the

interview data. The specific nature of the empirical work for this thesis was informed by earlier chapters and the iterative topic guide.

Of the silences identified in the convergence coding, ten of the key findings were less straightforward to explain by the different nature of the research question and focus of the data set (key findings 20, 22, 26, 31, 32, 36, 42, 43, 47 and 53). In the interview findings, change fatigue was identified and suggested to have the potential to disengage clinicians and negatively impact on implementation (key finding 20). This was because clinicians who are working under immense pressure and faced with regular change were suggested to not feel able to implement new interventions. This finding was not identified in either the focus group or systematic review data which may reflect that it is not a meaningful finding for optimising KM in primary care. One potential explanation for the silences is that most of the participants in the focus groups and systematic review studies were partaking in a research study and so had a vested interest in the work thus not identifying or experiencing change fatigue as an issue. It is also possible that the focus group participants saw the interviewer as a member of the MOSAICS study team and felt obliged to be universally positive about the training and implementation whereas the interview participants may have felt very differently and able to discuss the impact of implementation more openly and honestly. Similarly, this rationale may also help to explain key finding 26 whereby clinicians reported an inability to be proactive towards implementation planning due to workload pressures. This may not have been reported in the focus groups because of the role of the interviewer.

A novel finding that was only identified in the systematic review data was how GPs reported assumptions about patient preferences and assumed that the intervention placed an extra treatment burden on patients (key finding 43). Similar findings were anticipated in the focus group and interview data but were not identified. Again, this may be because interview participants were more candid with the interviewer as they were not part of the original MOSAICS research study team. This highlights a need for research to explore patient preferences in more detail and how these align with clinicians' perceptions of patient preferences.

Another silence that could not be explained by the nature of the research question and focus of the data sets related to finances and resources. The focus group and interview data identified that if no additional resources were needed, then general practices were more open to considering implementation and that funding helped to facilitate implementation in some practices but was insufficient in helping others (key finding 53). Interestingly, the systematic review data did not report any findings on finance or resource which are potentially important considerations when implementing new ways of working in a resource-constrained environment. One possible explanation for this is that some of the studies included in the systematic review interviewed patients, who are less likely to report wider organisational issues than HCPs working within the organisation. Furthermore, the papers included in the systematic review that were part of the MOSAICS study may not have been focussed on 'real-world' implications of implementation whilst in the context of a funded research trial.

Instances of silences that were more difficult to explain were noted in the systematic review data relating to intervention characteristics and the characteristics and needs of a practice's local population. In the other data sources, flexible interventions were reported to facilitate implementation, particularly who delivered the intervention, when, where and how (key finding 32). This is surprising considering the wide variation in primary care with regards to staffing model, practice size, management structure, practice pressures, and drivers. It would be reasonable to expect the systematic review data to highlight that an innovation that is flexible is more likely to be implemented or viewed more favourably as it fits with local contextual needs. The influence of the characteristics and needs of a practice's local population on engagement with implementation (for example physical mobility was an important factor in an ageing rural population) was not a finding in the systematic review data (key finding 22). Whilst the non-MOSAICS study in the systematic review focussed on patients and was therefore unlikely to report findings on practice demographic information, the other studies in the systematic review were conducted in the context of MOSAICS research under trial conditions and so it is perhaps surprising that the findings did not reflect this when participants were deciding whether to implement the innovation after the trial.

Other key findings from the focus group (key finding 36) and the interview (key finding 47) data that were not seen in the systematic review data related to how interest and drive towards quality improvement influenced engagement of HCPs with implementation. This suggests the potential for low priority being placed on quality improvement in OA care and can also be

explained, in part, by the patient participants in the systematic review studies who are potentially less likely to report quality improvement issues.

Silences were apparent in both the focus group data and the systematic review data regarding PPIE in implementation. A key finding in the interview data was how patient participation groups (PPGs) and PPIE were perceived to positively influence implementation (key findings 31 and 42). The silences in the other two data sets could be interpreted as implying that PPIE is *not* an essential ingredient for successful implementation as this was not reported. Also, despite interviewees perceiving PPGs and PPIE as central to implementation, there was limited demonstrable evidence that showed the ways in which patients and the public actively influenced how and what new models of care were implemented, or whether, ultimately, the key decisions were made by professionals. A possible explanation for these findings is that interviewees may have felt obliged to champion PPIE in implementation, in a culture whereby it is recognised that patients and the public *should* shape health services but in reality, is difficult to execute and presents a host of challenges. On the other hand, it is possible that findings related to PPIE did not feature in the focus groups or systematic review because the landscape of healthcare looked very different at the time the studies were conducted and PPIE and PPGs were not commonplace.

8.4.3 Development of a typology and draft recommendation statements (step 4)

The 53 findings were categorised into a typology summarising each distinctive domain. The typology groups are approaches to KM; the knowledge mobiliser role; understanding context; implementation planning; the nature of the intervention; and, appealing to a range of priorities. The typology is shown in Figure 19.

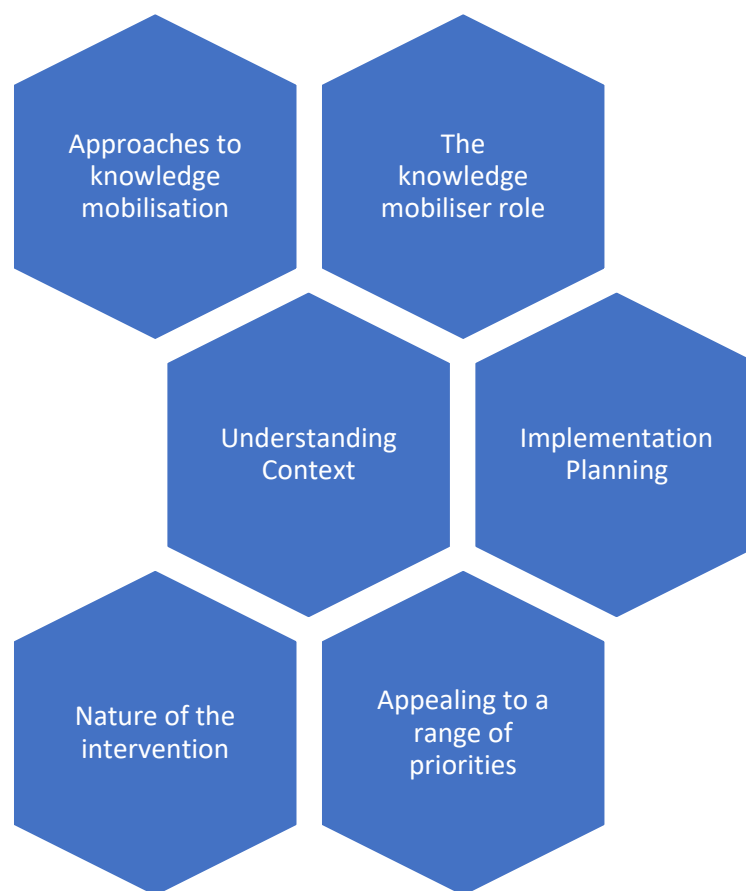


Figure 19 Key findings typology

Table 11 sets out the six typology categories, the key finding statements that informed the development of each recommendation²⁴ statement and the draft recommendation statements.

²⁴ The same key finding could inform more than one recommendation statement

Table 11 Development of draft recommendations

Typology category	Key findings which informed recommendation statement	Draft recommendation statement
Approaches to knowledge mobilisation		A. When implementing in primary care, offer knowledge mobilisation approaches that:
	1. A range of different types and formats of knowledge, including guidelines, experience, tacit knowledge, and case stories are given priority by stakeholders and influenced the adoption of the intervention	i. Utilise a range of different types and formats of knowledge, (including guidelines, experience, tacit knowledge and case stories)
	2.HCPs reported how support and training in consultation skills facilitated a change in their knowledge, confidence, and practice	
	3. Many participants preferred face to face mobilisation of knowledge, with concise messages/sell points	ii. Are face to face
	4.HCPs reported valuing the opportunities for feedback and reflection while receiving training. This facilitated behaviour change and the transition of knowledge to practice.	iii. Provide opportunities for reflection and feedback
	5.HCPs reported engagement with implementation because of positive experiences in delivering the intervention	
	6. The intervention changed clinicians' approaches from biomedical to a more holistic, self-management approach	
	7. Clinicians described a need for 'head space' to enable time to stop and think about the evidence base to ensure the best services are being provided	
	8. Participants reported how implementation was optimised if they received knowledge from a trusted, credible source (often from within their peer network)	iv. Are delivered by credible knowledge brokers

	9.HCPs valued protected, dedicated time for whole practice continuing professional development (CPD)/discussion because it provided time and headspace for implementation planning	v. Involve the whole general practice organisation
	10.HCPs valued protected, dedicated time for whole practice CPD/discussion because the whole practice approach ensured that consistent messages were delivered by all staff. GPs report that practice managers and administration staff have a role in implementation, however, these professional groups were not included in any study	
	11.HCPs valued protected, dedicated time for whole practice CPD/discussion because it enabled local contextual factors to be considered	
The knowledge mobiliser role	12. The affiliation to multiple networks was reported to be beneficial in optimising implementation because it was seen to speed up implementation and overcome barriers. This also gave implementers confidence in implementation because the wider team added credibility to the venture	B. The ability of individuals to mobilise knowledge for successful implementation is enhanced if they are part of multiple networks
	13.HCPs reported valuing the support provided by the research team in guiding implementation (including technical issues with template/installing, providing guidebooks, training)	C. A trusted, credible individual needs to be identified to lead implementation projects at each beacon site
	14. The skill set of the knowledge mobiliser was essential to implementation	
	8. Participants reported how implementation was optimised if they received knowledge from a trusted, credible source (often from within their peer network)	
	15. Implementation was seen as 'bottom-up' (in some practices) and driven by front line staff rather than being imposed by managers	D. Everybody has a role in driving knowledge mobilisation (for example

	<p>16. Participants expressed uncertainty as to whose role it is to mobilise knowledge for implementation some participants viewed it as everybody's role, some viewed it as a senior person such as a manager. Individuals perceived to be key knowledge mobilisers did not recognise this role</p>	<p>clinicians, commissioners, patients, public)</p>
	<p>16. Participants expressed uncertainty as to whose role it is to mobilise knowledge for implementation some participants viewed it as everybody's role, some viewed it as a senior person such as a manager. Individuals perceived to be key knowledge mobilisers did not recognise this role</p>	<p>E. Knowledge mobilisation should be driven by key decision makers in an organisation (for example manager, or someone in a senior role)</p>
	<p>19. Participants reported the culture and leadership (including practice manager) within a general practice influences engagement with implementation. Power dynamics in practices influenced the uptake of implementation, with some examples where one individual could block or facilitate involvement</p>	
	<p>13. HCPs reported valuing the support provided by the research team in guiding implementation (including technical issues with template/installing, providing guidebooks, training)</p>	<p>F. The role and responsibilities of dedicated knowledge mobilisers should be defined at the beginning of implementation</p>
	<p>16. Participants expressed uncertainty as to whose role it is to mobilise knowledge for implementation some participants viewed it as everybody's role, some viewed it as a senior person such as a manager. Individuals perceived to be key knowledge mobilisers did not recognise this role</p>	
	<p>17. Participants reported the knowledge mobiliser to be an essential role in implementation in primary care</p>	
	<p>16. Participants expressed uncertainty as to whose role it is to mobilise knowledge for implementation some participants viewed it as everybody's role, some viewed it as a senior person such as a manager. Individuals perceived to be key knowledge mobilisers did not recognise this role</p>	<p>G. The knowledge mobiliser role needs to be explicit (for example acknowledged in job specifications)</p>

	18. Some participants reported a desire to make the knowledge mobiliser role formal for example with a specific job specification	
Understanding context		H. Those promoting implementation within a general practice organisation need an understanding of:
	19. Participants reported the culture and leadership (including practice manager) within a general practice influences engagement with implementation. Power dynamics in practices influenced the uptake of implementation, with some examples where one individual could block or facilitate involvement	i. Leadership and decision makers in the organisation
	20. The notion of change fatigue was perceived to influence implementation by disengaging HCPs who are working under immense pressure and do not feel able to implement new interventions	ii. Culture in the practice, including attitudes to change and change fatigue
	19. Participants reported the culture and leadership (including practice manager) within a general practice influences engagement with implementation. Power dynamics in practices influenced the uptake of implementation, with some examples where one individual could block or facilitate involvement	
	21. Implementation was suggested by participants to have the potential to disrupt equipoise/balance within a practice because doing more for one condition or group of patients was perceived to have the potential to detrimentally affect others	iii. The characteristics (and needs) of their patient population
	22. Characteristics and needs of a practice's local population influenced engagement with implementation, for example, physical mobility is an important factor in an ageing rural population	

	23. Participants reported how the staffing model and staff turnover of a general practice influenced HCPs attitudes/engagement towards implementation and the extent to which staff has a vested interest in practice performance influenced engagement	iv. The characteristics and skill mix of the practice staff
	24. Participants reported huge variation in the role of the practice nurse in primary care due to the nature of GPs being run as small businesses. Practice nurses were reported to work with differing levels of autonomy and their engagement in implementation planning was variable. In some practices, practice nurses were central to driving forwards implementation (decision making) and in others not	
	25. Practices tend to work in isolation- interviewees speculated that working more collaboratively in small networks would facilitate implementation	v. The characteristics of the practice network (for example whether it works in isolation or in a network such as a locality group of practices)
	12. The affiliation to multiple networks was reported to be beneficial in optimising implementation because it was seen to speed up implementation and overcome barriers. This also gave implementers confidence in implementation because the wider team added credibility to the venture	
Implementation planning	9. HCPs valued protected, dedicated time for whole practice continuing professional development (CPD)/discussion because it provided time and headspace for implementation planning	I. Offer dedicated time for a whole practice approach to implementation planning including all stakeholders such as clinicians, practice managers, and administrative staff
	10. HCPs valued protected, dedicated time for whole practice CPD/discussion because the whole practice approach ensured that consistent messages were delivered by all staff. GPs report that practice managers and administration staff have a role in	

	implementation, however, these professional groups were not included in any study	
	26.HCPs reported the inability to be proactive towards implementation due to immense pressure faced working in primary care meaning that there is not enough time to plan	
	27. Evaluation needs to be tailored to key stakeholder drivers and priorities. Evaluation outcomes need to be planned at the start of the implementation journey and relevant to all stakeholders	J. Determine the approach to evaluation at the planning stage, including consideration of relevant outcome data that meets the needs of all stakeholders
	28. Collection of relevant outcome and evaluation data is challenging because of NHS systems and hard to measure outcomes	
	29. Evaluation identified how the support of the research team was essential in initiating and maintaining implementation and routinisation of the intervention. Some participants report how implementation ceased when the support of the research team was withdrawn	K. Determine the approach to sustainable implementation at the outset
	30.HCPs and researchers report consistency in mobilising knowledge to all staff within the general practice as a challenge. HCPs reported an ad-hoc/pick and mix style of implementation following individual reflection and evaluation	
	31. Patient involvement was reported to be essential in achieving successful implementation in one practice	L. Involve patients in implementation and evaluation planning
	42. Patient participation groups (PPGs) were perceived as powerful in driving change in primary care practices	
Nature of the intervention		M. Those who are driving and leading implementation need to be able to

		demonstrate to stakeholders that the intervention:
	32. Flexible interventions were seen to facilitate implementation, particularly who delivered the intervention, when, where and how	i. Offers flexibility in whom it is delivered by, where it is delivered and how
	33. Implementation was optimised if the intervention aligned with the patient and/or clinician preferences for self-management. The intervention was not seen to make sense to some GPs who perceived that they had a limited role in self-management.	ii. Offers flexibility in meeting a range of patient preferences e.g. to self-manage
	34. Practice nurses and HCPs valued the opportunity to expand their role to implement and deliver the intervention because it was seen to enhance their professional autonomy by enabling them to manage patients with joint pain without referring patients back to the GP	iii. Aligns with clinician beliefs and values
	35. HCPs reported engagement with the implementation of an intervention that aligned with holistic care	
	36. The desire/drive towards quality improvement influenced engagement of HCPs with the implementation	
	37. GPs valued strategies and opportunities to legitimise patients concerns and give reassurance to patients regarding joint pain	
	33. Implementation was optimised if the intervention aligned with the patient and/or clinician preferences for self-management. The intervention was not seen to make sense to some GPs who perceived that they had a limited role in self-management.	

	<p>38. Alignment of interventions with policy and culture of the management of long-term conditions and multi-morbidity facilitated implementation because it was recognised as important and provided clinicians with transferrable skills</p>	<p>iv. Aligns with health policy</p>
	<p>35. HCPs reported engagement with the implementation of an intervention that aligned with holistic care</p>	
	<p>39. Policy and the regulatory environment affected implementation both positively and negatively for example Quality Outcomes Framework (QOF) influenced practice staffs' views of what was a priority. The need to adhere with NICE guidance on its own was not a motivator, in the absence of other drivers e.g. Care Quality Commission (CQC) target or QOF, however, NICE guidelines could be turned to a motivator when coupled with CQC target</p>	
	<p>40. Patient preferences influenced implementation</p>	<p>v. Aligns with patient expectations</p>
	<p>41. Clinicians perceived the societal views of OA to require a biomedical approach which was a barrier to implementation</p>	
	<p>42. Patient participation groups (PPGs) were perceived as powerful in driving change in primary care practices</p>	
	<p>43. GPs reported assumptions about patient preferences, assuming that the intervention placed an extra treatment burden on patients</p>	
	<p>44. Implementation was perceived as not onerous as it required minimal system level change as it did not require extra clinics, structural change, or increased time of time of consultations</p>	

	21. Implementation was suggested by participants to have the potential to disrupt equipoise/balance within a practice because doing more for one condition or group of patients was perceived to have the potential to detrimentally affect others	
Appealing to a range of priorities		N. Those promoting adoption of implementation within a general practice need to appeal to a range of different priorities including:
	45. Individual clinician's motivators influenced engagement with implementation, for example, CPD or personal appraisal	i. Individual clinician priorities including CPD, appraisal
	34. Practice nurses and HCPs valued the opportunity to expand their role to implement and deliver the intervention because it was seen to enhance their professional autonomy by enabling them to manage patients with joint pain without referring patients back to the GP	
	46. The reduction in workload for GPs was a motivating factor for implementation. HCPs did not want to implement an intervention that would increase their workload	
	47. Individual interest in quality improvement and the condition/disease was reported to be a motivating factor for engaging with implementation	
	48. HCPs reported engagement with implementation because the intervention was perceived to enhance consistency but also gave more treatment options and the content for explanations based on evidence	

	49. GPs and practice nurses differed in their desire to close off the consultation (vehicle to dispose of patients and shift responsibility) or to provide a foundation for future consultations. Implementation of the intervention facilitated both of these	
	36. The desire/drive towards quality improvement influenced engagement of HCPs with the implementation	
	50. Different stakeholders have different priorities, for example, commissioners give priority to cost saving, GPs reduce consultations/quality improvement. Participants reported how the implementation of an intervention that provides no financial savings is seen as a low priority to GPs and commissioners. This can make implementation challenging	
	40. Patient preferences influenced implementation	ii. Patient priorities
	41. Clinicians perceived the societal views of OA to require a biomedical approach which was a barrier to implementation	
	33. Implementation was optimised if the intervention aligned with the patient and/or clinician preferences for self-management. The intervention was not seen to make sense to some GPs who perceived that they had a limited role in self-management.	
	51. You can improve patient care but not endlessly	iii. Practice priorities including targets
	52. Implementation of interventions for OA was often seen as a low priority	

	53. Implementation could only be considered if no additional resource was needed. Funding helped to facilitate implementation in some practices but was insufficient in helping others	
	39. Policy and the regulatory environment affected implementation both positively and negatively for example Quality Outcomes Framework (QOF) influenced practice staffs' views of what was a priority. The need to adhere with NICE guidance on its own was not a motivator, in the absence of other drivers e.g. Care Quality Commission (CQC) target or QOF, however, NICE guidelines could be turned to a motivator when coupled with CQC target	
	53. Implementation could only be considered if no additional resource was needed. Funding helped to facilitate implementation in some practices but was insufficient in helping others	iv. Commissioning priorities such as cost savings or reducing referrals
	50. Different stakeholders have different priorities, for example, commissioners give priority to cost saving, GPs reduce consultations/quality improvement. Participants reported how the implementation of an intervention that provides no financial savings is seen as a low priority to GPs and commissioners. This can make implementation challenging	

Table 12 shows the number of draft recommendation statements included in each of the typology categories.

Typology category	Number of draft recommendation statements
Approaches to knowledge mobilisation	5
The knowledge mobiliser role	6
Understanding context	5
Implementation planning	4
Nature of the intervention	6
Appealing to a range of priorities	4

Table 12 Number of draft recommendation statements per typology category

8.5 Discussion

8.5.1 Main findings

Applying a triangulation protocol to integrate the qualitative findings of three previously analysed data sets has enhanced this thesis by providing additional insights and bringing together several perspectives to address the aims of the work. The added value of the triangulation protocol in informing the recommendations lies in the ability to explore the dissonances and silences amongst the data sets and in the development of a typology. Revisiting the three data sets and comparing the nuances of the key findings within the text enabled a greater depth in analysis and a more critical understanding of the data. The modified triangulation protocol provided a pragmatic, rigorous structure to the steps required to amalgamate the key findings into recommendation statements.

The triangulation process has further developed the thesis in several key areas. Firstly, the method has provided a greater depth of analysis to identify novel findings and understand the issues surrounding PPIE which have emerged as important questions for further research. Whilst not all the data sets identified key findings related to PPIE, either because PPIE had not been undertaken or was not a pertinent component of research at the time the studies were conducted, the triangulation protocol has illuminated some instances where it may be fundamentally at the root of the problem for KM. The triangulation protocol has identified an apparent gap in research relating to known patient preferences and expectations in the implementation of innovations for OA and has also shown how important these are when considering the implementation of innovations for OA in primary care. In

addition, more attention needs to be paid to the role and involvement of patients and the public in KM and further research conducted to better understand if, how and when patients can inform and add value to the process.

Despite the increasing prominence of implementation research in the literature, the interpretive analysis has provided further understanding of the gap that is evident in the data regarding the subtle differences of focus in a traditional research setting, compared to that in real-world implementation. This demonstrates how research and implementation are not viewed as one entity and is exemplified by the limited data regarding evaluation in traditional research data. It is important to address this early in the 'traditional' research journey to ensure optimal uptake of innovations and successful implementation in the real world.

Further insight into the use of theory in mobilising knowledge for the implementation of innovations for OA has also been gleaned as a result of the triangulation process and can help to explain some of the results. The different theoretical perspectives of the data sets were examined as part of step 3 of the protocol (iterative checking). The predominant theories used across the three data sets were NPT and i-PARIHS²⁵. Both theories aim to understand and explain certain aspects of implementation, with NPT focussing on the actions of the HCPs involved in implementation, and i-PARIHS focussing on contextual factors and the role of the facilitator in KM. Whilst NPT was used in the systematic review data set to understand how

²⁵ See Chapter 2 for a more detailed description of NPT (section 2.6.1) and i-PARIHS (section 2.6.4)

HCPs made sense of the complex intervention being implemented, and to explain their engagement and action surrounding this, very little data were found on the evaluation component (reflexive monitoring) of this theory. This is surprising, considering that NPT focusses on how a complex intervention becomes embedded in clinical practice, however this may reflect the discordance between research and implementation and how research studies are funded for the duration required to deliver outcomes that serve academic agendas and may cease by the time that real-life, relevant outcomes are collected by key stakeholders involved in the long-term adoption of an innovation. Considering i-PARIHS in light of the findings of this chapter, it is noted that the typology (Figure 19) maps very closely to the domains of the i-PARIHS framework. This is shown in Figure 20.



Figure 20 Mapping the triangulation typology to the i-PARIHS framework

The 'knowledge mobiliser role' category within the typology shows some similarities with the 'facilitation' construct of the i-PARIHS framework. However, the recommendation statements developed within this category provide more detail on actions and resources that may help to facilitate the mobilisation of knowledge and highlight issues requiring further exploration and clarification in the stakeholder review such as the formalisation of the knowledge mobiliser role.

The other pertinent issue relating to the theory, that was revealed as part of the analysis, was that patients and the public are not well represented by the theories used across the three data sets. Interestingly, one of the studies from the systematic review (Cuperus et al., 2013) that researched patient

experiences of implementation, used the integrated change (i-Change) model which is derived from psychology and explains behaviour and motivation change. The use of psychological theory for studying patients and implementation theories for studying either complex interventions, organisations or HCPs again demonstrates the need for a more holistic approach to integrating patients with implementation to ensure that KM strategies are relevant. However, on balance, one of the main benefits of using the i-PARIHS framework is the more holistic and complete nature of the domains relevant to KM in this thesis.

8.5.2 Methodological implications, strengths and limitations

Whilst a triangulation protocol was the chosen method for this study, it is acknowledged that alternative methods exist for synthesising qualitative research (Barnett-Page and Thomas, 2009). For example, a textual narrative synthesis involves reporting on the context, characteristics, quality, and findings of each study before comparing the similarities and differences between the studies (Barnett-Page and Thomas, 2009). The reporting of the overall similarities and differences between the data sets is the only step of this method not to have been undertaken thus far in the thesis. Whilst an understanding of the similarities and differences between the data sets would have provided some additional insights to this work, the earlier steps of the approach would have been repetitive, without providing the depth of additional analysis required for this study. Furthermore, whilst a textual narrative synthesis comprises several discrete steps, it is not as robust as the triangulation protocol and does not aid the process of producing recommendation statements for inclusion in the toolkit, which was one of the

aims of this study. A triangulation protocol was deemed the most appropriate and robust method to address the aims of this study considering the volume of rich data collected. A triangulation protocol provided the ability to synthesise and amalgamate findings by generating depth in analysis beyond that for the analysis of the individual data sets.

A potential criticism of the approach adopted is that it is reductionist in nature and aligns with a positivist paradigm (Guba and Lincoln, 1994). This study does not suggest that the phenomena of KM for OA in primary care can be explained by simple, discrete steps, nor does it aim to achieve a complete understanding of such complex, multidimensional issues. It is recognised that the draft recommendation statements have evolved from data that captures dynamic circumstances involving multifaceted interactions. There are many ways to deal with qualitative data and considering the volume of data collected thus far and the end point of the thesis, a pragmatic triangulation protocol was deemed the most appropriate method for achieving balance between remaining true to the data and recognising complexity, whilst ensuring the outputs of the thesis are usable and ultimately contribute towards accelerating the uptake of evidence into practice. This study adopted a pragmatic approach to seek deeper understandings and interpret the meanings of three empirical data sets to develop recommendations that are sensitive to the richness of the data collected (Greenhalgh and Taylor, 1997). In better understanding the depth and nuances of the data, it was possible to take steps towards generating recommendations, based on lessons learnt from a larger body of work, and to make these usable and relevant to key stakeholders in the future.

The triangulation protocol approach adopted in this study used methods that had been modified from the work of Farmer et al. (2006). A criticism by Farmer et al. (2006) is the lack of procedural information within triangulation protocols and the adoption of intuitive approaches that lack specific methodological detail. This study used a clearly articulated triangulation protocol to enhance transparency and replicability of the process and to address previous criticisms of the method.

Farmer et al. (2006) describe a six-step process which separates the review of the coded findings between researchers as a distinct step. The study reported in this chapter combined this step within convergence coding and so has performed the same processes in a five-step protocol. In contrast to Farmer et al. (2006), this study did not identify the frequency of key findings amongst each data set as 'complete agreements' were considered to provide sufficient evidence of data strength.

Within step 1, Farmer et al. (2006) advocate sorting data into similarly categorised segments or overarching themes. The decision was made in this study to sort individual key findings from each data set and not overarching themes, to mitigate the risk of losing the meaning and nuances of the rich data within each data set. Similarly to Farmer et al. (2006), supporting quotes were identified, however, the candidate included quotes for each key finding rather than each theme, as advocated by Tonkin-Crine et al. (2015) as this was felt to maintain the detailed, contextualised nature of each individual finding. A disadvantage of this method is that it is time-consuming given the number of key findings (n=95) however it meant that close attention was paid to each key finding throughout the process and subtleties

were not lost in the early stages by the themes being too broad. The notion of wanting to maintain a detailed examination of the data was also reflected in step 2 where convergence coding was performed on individual findings rather than theme areas, which enabled a depth and understanding of the meaning and interpretation of the data at an individual rather than global level.

A unique methodological addition to this study was the categorisation of findings and development of a typology of the key empirical domains. The typology shows that for each domain there are more than one finding and subsequent recommendations. This enhances the validity of the research as the different methodological approaches produced convergent findings of the same empirical domain (Table 12) (Erzberger and Prein, 1997). Another strength of developing the typology was the identification of key areas which were central to formulating the recommendations.

Whilst the candidate led the process, collaborative involvement with the thesis supervisors was necessary. Therefore, two researchers (LS and ZP) were involved in the first three steps of the triangulation process, and the whole study team (LS, ZP, AF, and KD) involved in step four. The study would be more robust if more than one researcher undertook independent application of the triangulation protocol and compared their findings as in the case of Farmer et al. (2006). In adopting an approach that was led by the candidate with collaborative, team involvement, comments and feedback from the team were obtained and incorporated prior to stakeholder review which enabled a considered, thorough and robust stakeholder engagement process.

Due to the need to develop a complete picture of the data that informed the development of the toolkit, the results of the triangulation protocol were not weighted. The decision was made for the triangulation protocol to be inclusive and not to challenge any findings that only appeared in one data set. All recommendation statements were carried forward to the stakeholder review so that each data derived recommendation could be evaluated by key stakeholders (Chapter 9). In addition, it is acknowledged that some of the recommendation statements could be condensed as some of the wording implied similar meaning. Finally, as the triangulation protocol had to be completed for the stakeholder engagement event and consensus exercise (step 5) some analysis of contributing data continued iteratively after this time. As a result, one of the key findings relating to the academic-clinical partnership was not included in the stakeholder engagement consensus exercise.

Using a novel design, the triangulation process adds to the validity of the findings and interpretations of the three rich data sets by bringing together a range of perspectives of the research aim. The process enabled depth and consideration of the strengths and limitations of each data set. Furthermore, it identified themes that transpose primary care practices, respondents and methods to enhance the credibility and transferability of the findings (Tonkin-Crine et al., 2015, Farmer et al., 2006). The systematic process for integrating multiple data sets and the transparent audit trail and documentation of the process undertaken is a strength of the study design which made the process more robust. This clearly details how the key findings and concepts were agreed and the steps taken to arrive at the study

outcomes which increases the validity and reduces the subjectivity of the findings moving into the final stage of the thesis (Jonsen and Jehn, 2009).

To date, there are few examples of triangulation protocols in the literature, therefore this study adopted a pragmatic, modified approach. It is important to remember that incidents of dissonance do not reflect shortcomings in the data but provide the opportunity for increased, richer understandings of new findings and may lead to further work (Tonkin-Crine et al., 2015, O’Cathain et al., 2010, Miles and Huberman, 1994). A potential limitation of this study is the limited scope and narrow context nature of the data. Almost all the data sets were collected within the context of the MOSAICS research study (Dziedzic et al., 2014a). Whilst the restricted nature of most of the data may be viewed as a limitation of the study, the depth of data analysis reflected the reality for the given research study and implementation project in the context of this thesis. In addition, the interview data were collected in the context of the JIGSAW implementation project and the systematic review included a non-MOSAICS study, so were broader in scope thus mitigating this risk. The key elements of the studies for all data sets include primary care settings, involving GPs, practice nurses and healthcare support workers, and, implementing evidence-based interventions. The following chapter (Chapter 9) explores the transferability of these domains and highlights areas of agreement for key stakeholders. As with all qualitative data interpretation, subjectivity is a possibility, however, strategies were in place to minimise this, including two researchers conducting the protocol who were familiar with all three data sets, regular opportunity for discussion, researcher reflexivity and involvement of the wider research team.

This study was deliberately not constrained by any one theoretical approach; however, each discrete data set was informed by individual theoretical approaches. Although the results of this chapter are empirically driven, each data derived finding and the subsequent development of recommendation statements are underpinned by relevant theory. The development of a typology is a strength of the study that aids interpretation and provides new insight into the underlying dimensions of the analysis. In addition, the typology adds to the conceptual strength of the analysis and has influenced the development of draft recommendation statements. When considering the typology in relation to existing implementation theories, similarities are noted in the inclusion of understanding context and the nature of the intervention as important concepts identified in several theories including i-PARIHS (Harvey and Kitson, 2016) and the conceptual framework developed by Lau et al. (2016). Furthermore, the idea of planning or guiding implementation is also seen in several process models of implementation, including the knowledge to action (K2A) framework (Nilsen, 2015). This typology adds important conceptualisations which may provide valuable analytic insight into KM in primary care. The contributions made by the typology that have influenced step 5 of the process, the stakeholder review, relate to more specific details regarding the approaches to KM and the need for KM activity to align to a range of priorities to ensure optimal implementation. The typology and subsequent recommendation statements explicitly reflect the importance of patients, the public, and commissioners of primary care services. The failure to include these stakeholders in many existing theories, models and frameworks may be a contributing factor to the insufficient

uptake of evidence in practice and recognising these stakeholders in future work may facilitate closing the evidence to practice gap.

8.6 Conclusion

Conducting a triangulation protocol has enabled a shift in thinking from the findings generated by each method, to the rich cross-cutting themes from a range of methods (Jonsen and Jehn, 2009). This chapter has presented the results of a triangulation process that expands the breadth and depth of understanding of the empirical work of the thesis in several key areas.

The discordance between research and the real world has been exemplified by the nature and type of evaluation data captured in the original research. Further insight into the use of theory has also been gleaned. The typology and subsequent recommendations build on existing theoretical approaches to move towards an approach which is more focussed on KM rather than implementation alone, through the emphasis on the role of the knowledge mobiliser in facilitating the process. Finally, whilst stakeholders identified the importance of PPIE in implementation, the nature and scope of their role remains uncertain.

These findings have informed the development of a typology and generation of draft recommendation statements which require further consideration, interpretation and possible refinement for inclusion in the toolkit. The next chapter presents the results of a stakeholder engagement consensus exercise which represents step 5 of the triangulation protocol.

Chapter 9: Development of a toolkit for KM in primary care: a stakeholder engagement consensus exercise

9.1 Introduction

The previous chapter outlined a triangulation study which combined the key empirical findings from this thesis. Draft recommendation statements were identified to inform the development of a toolkit for optimising KM for OA in primary care. This chapter details the results of a stakeholder engagement consensus exercise. The aim of the stakeholder engagement exercise was to get stakeholders to rate and vote on the importance of the draft recommendation statements, to better understand if the recommendations were acceptable and relevant and to refine the draft recommendation statements and subsequently inform the content of a KM toolkit for OA in primary care. Eliciting the opinions of key stakeholders on the content and priority areas of the toolkit is key to supporting the successful mobilisation of research findings into primary care practice and to contribute to further practice improvements to reduce the evidence-to-practice gap.

9.2 Overview of methods

A detailed description of the study methods is provided in Chapter 5. The study used digital voting technology in a conference consensus exercise to ask stakeholders to rate and vote on the importance of the draft recommendation statements. The conference consensus was conducted in two rounds at a national KM conference event entitled Commissioning Evidence-Based Musculoskeletal Services. The first round was to determine the level of agreement of key stakeholders with the recommendation statements and the second round focused on identifying priority areas. Written and verbal comments from the event were also collated.

9.3 Results

9.3.1 Participants

Demographic details of participants were not collected, however, attendees at the event included managers, clinicians, commissioners, patients, and lay representatives. Attendees came from a wide spread of regions including the West Midlands, East Midlands, East of England, South West and London. A total of 27 of the 30 delegates participated in the first digital voting session and 24 delegates participated in the second session. Two of the 24 participants in the second session had not taken part in the first session. Not all 27 participants voted on every statement in the first round.

9.3.2 Consensus conference digital voting

The following section presents the results of the two rounds of voting by typology category. The typology categories are: approaches to KM; the knowledge mobiliser role; understanding context; implementation planning; nature of the intervention; and, appealing to a range of priorities. For each group of recommendation statements, a narrative description of the findings is accompanied by a table of results (Tables 13-18). Each table shows the number of participants and percentage levels of agreement with each recommendation statement and the priority ranking. The recommendation statements that obtained 75% and over level of agreement are coloured blue. The overall priority areas, based on the second round of voting is then presented in Table 19 and the verbal and written feedback comments (Box 7) are referred to as and where relevant. A summary of the verbal and written comments is presented in Box 7.

Some statements may depend on context, for example, what the intervention is and where it is being implemented and the individuals or teams involved (v and w)

There may be several layers of individuals driving implementation and mobilising knowledge. Certain individuals within an organisation may 'block' KM and this could be challenging to circumnavigate (v)

With a patient safety intervention, changes in practice may need to be made quickly and whole practice engagement at the start of the process may not be possible (v)

Patients may feel overlooked (v)

Clinicians may not know how to use and apply theory in practice (v)

Implementation requires consideration about how to change practice for the better whilst maintaining parity and fairness to other services. Knowledge mobilisers may wish to show how new ways of working can offer similar services for other conditions (v)

Some recommendation statements may be difficult to interpret if participants have not experienced the situation or circumstances (w)

KM is important in healthcare requiring collaboration from a range of stakeholders (w)

Box 7 Verbal and written comments from the stakeholder engagement exercise

(v= verbal comment, w = written comment)

Approaches to knowledge mobilisation (Table 13)

Over 75% of voters agreed with statements relating to using a range of different types and formats of knowledge (96%), offering opportunities for reflection and feedback (92%), and involving credible knowledge mobilisers (84%). These were also the three most important recommendation statements in the priority voting.

Responses were more mixed for statements relating to the use of theory (73.5% agreed), delivering KM approaches face to face (65% agreed, 23% were neutral and 12% disagreed) and involving the whole practice organisation (67% agreed, 11% were neutral and 22% disagreed). Verbal comments suggested that the contextual nature of some of the recommendation statements made it difficult to vote definitively. For example, if patient safety was compromised then implementation strategies are likely to be immediate, non-negotiable and imposed on a general practice organisation. Other comments indicated how clinicians may be uncertain in the use and application of theory.

Table 13 Approaches to knowledge mobilisation results

Recommendation statements	n=agreeing (%)								Priority ranking 1 = most important (% voting most important)
	Total % agree	Strongly agree	Agree	Somewhat agree	Neutral	Somewhat Disagree	Disagree	Strongly disagree	
Approaches to knowledge mobilisation									
When implementing in primary care, offer knowledge mobilisation approaches that:									
a) Are grounded in a theoretical approach	73.5	1(3.5)	9(35)	9(35)	3(11.5)	3(11.5)	1(3.5)	(0)	6 (10%)
b) Utilise a range of different types and formats of knowledge	96	11(44)	12(48)	1(4)	1(4)	0(0)	0(0)	0(0)	1 (26%)
c) Are face to face	65	8(31)	5(19)	4(15)	6(23)	2(8)	1(4)	0(0)	5 (11%)
d) Provide opportunities for reflection and feedback	92	10(40)	10(40)	3(12)	1(4)	1(4)	0(0)	0(0)	2 (21%)
e) Are delivered by credible knowledge mobilisers	84	12(48)	6(24)	3(12)	4(16)	0(0)	0(0)	0(0)	3 (20%)
f) Involve the whole general practice organisation	67	4(15)	4(15)	10(37)	3(11)	4(15)	2(7)	0(0)	4 (12%)

(statements where 75% or higher level of agreement = row coloured blue)

The knowledge mobiliser role (Table 14)

Over 75% of voters agreed with statements relating to knowledge mobilisers being well networked (96%), trusted, credible individuals (85%) and KM being 'everybody's role' (96%). Similar levels of agreement were obtained for statements relating to defining the roles and responsibilities of knowledge mobilisers at the start of the implementation process (78%).

Responses were more mixed for statements relating to managers or senior individuals within an organisation driving KM (53.5% disagreed) and formalising the knowledge mobiliser role for example in job specifications (74% agreed, 25% neutral or disagreed). Verbal comments suggested how many individuals can drive implementation and mobilise knowledge and that a key issue within organisations is encountering individuals who 'block' KM or implementation.

Two priority votes were conducted for this group of recommendation statements. One relating to the characteristics of the knowledge mobiliser and one relating to the role of the knowledge mobiliser. The results showed that having key decision makers within an organisation to drive knowledge mobilisation was the lowest priority for the participants. The characteristics voted as the highest priority were being trusted and credible (31%) and being 'anyone's role' (including patients and the public clinicians and/or commissioners) (29%).

Table 14 The knowledge mobiliser role results

Recommendation statements	n=agreeing (%)								Priority ranking 1 = most important (% voting most important)
	Total % agree	Strongly agree	Agree	Somewhat agree	Neutral	Somewhat disagree	Disagree	Strongly disagree	
The knowledge mobiliser role									
The ability of individuals to mobilise knowledge for successful implementation is enhanced if they are part of multiple networks	96	11(41)	6(22)	9(33)	0(0)	1(4)	0(0)	0(0)	3 (26%)
A trusted, credible individual needs to be identified to lead implementation projects at each beacon site	85	15(58)	7(27)	0(0)	3(11.5)	1(3.5)	0(0)	0(0)	1 (31%)
Everybody has a role in driving knowledge mobilisation (e.g. clinicians, commissioners, patients, public)	96	20(77)	4(15)	1(4)	1(4)	0(0)	0(0)	0(0)	2 (29%)
Knowledge mobilisation should be driven by key decision makers in an organisation (e.g. manager or senior role)	35	3(12)	2(8)	4(15)	3(11.5)	8(31)	4(15)	2(7.5)	4 (14%)

Continued over page

Table 14 continued

Recommendation statements	n=agreeing (%)								Priority ranking 1 = most important (% voting most important)
	Total % agree	Strongly agree	Agree	Somewhat agree	Neutral	Somewhat disagree	Disagree	Strongly disagree	
The knowledge mobiliser role									
The role and responsibilities of dedicated knowledge mobiliser should be defined at the beginning of implementation	78	9(33)	6(22.5)	6(22.5)	3(11)	1(4)	2(7)	0	1 (72%)
The knowledge mobiliser role needs to be explicit (for example acknowledged in job specifications)	74	3(11)	9(33)	8(30)	3(11)	2(7)	1(4)	1(4)	2 (28%)

(statements where 75% or higher level of agreement = row coloured blue)

Understanding context (Table 15)

The highest levels of agreement for round one of the consensus exercise were given for the recommendation statements associated with understanding context. Over 75% voters agreed with statements relating to understanding leadership and decision makers within an organisation (96%), the culture in a general practice organisation (100%), patient demographics and needs (92%), the characteristics and skill mix of practice staff (96%) and the characteristics of the practice networks such as their affiliation to local networks (96%).

The most important statement in the priority voting related to understanding the characteristics and needs of the patient population (31%). Written and verbal comments exemplify the importance of understanding context and how an intervention is being implemented and who with as influential factors.

Table 15 Understanding context results

Recommendation statements		n=agreeing (%)							Priority ranking 1 = most important (% voting most important)
Understanding Context	Total % agree	Strongly agree	Agree	Somewhat agree	Neutral	Somewhat disagree	Disagree	Strongly disagree	
Those promoting implementation within a general practice organisation needs an understanding of:									
a) Leadership and decision makers in the organisation	96	14(54)	10(38)	1(4)	1(4)	0	0	0	3 (18%)
b) Culture in the practice, including attitudes to change and change fatigue	100	14(56)	7(28)	4(16)	0	0	0	0	2 (25%)
c) The characteristics (and needs) of their patient population	92	18(72)	4(16)	1(4)	0	2(8)	0	0	1 (31%)
d) The characteristics and skill mix of the practice staff	96	11(42)	8(31)	6(23)	0	1(4)	0	0	4 (17%)
e) The characteristics of the practice network (e.g. working in isolation or in locality group)	96	11(44)	8(32)	5(20)	1(4)	0	0	0	5 (9%)

(statements for 75% or higher level of agreement = row coloured blue)

Implementation planning (Table 16)

Over 75% of voters agreed with statements relating to involving key stakeholders in implementation planning (89%), determining the approach to implementation evaluation at the planning stage (96%), involving patients in implementation planning (92%), and determining sustainable implementation approaches at the outset (76%). However, the statement relating to determining sustainable implementation approaches at the outset received a slightly more mixed response as 24% of participants disagreed. Verbal comments suggested that HCPs are not always the key champions or drivers of new innovations and that patients and the public are central to raising awareness of new services. Findings suggest that participants viewed the elements of implementation planning as of similar importance as a clear priority was not identified.

Table 16 Implementation planning results

Recommendation statements	n=agreeing (%)								Priority ranking 1 = most important (% voting most important)
	Total % agree	Strongly agree	Agree	Somewhat agree	Neutral	Somewhat disagree	Disagree	Strongly disagree	
Implementation planning									
Offer dedicated time for a whole practice approach to implementation planning including all stakeholders such as clinicians, practice managers, and administrative staff	89	12(44)	11(41)	1(4)	0	2(7)	0	4	1 (26%)
Determine the approach to evaluation at the planning stage, including consideration of relevant outcome data that meets the needs of all stakeholders	96	14(56)	8(32)	2(8)	0	1(4)	0	0	1 (26%)
Determine the approach to sustainable implementation at the outset	76	10(38)	5(19)	5(19)	0	3(12)	3(12)	0	2 (24%)
Involve patients in implementation and evaluation planning	92	10(40)	10(40)	3(12)	1(4)	1(4)	0	0	2 (24%)

(statements for 75% or higher level of agreement = row coloured blue)

Nature of the intervention (Table 17)

Over 75% of voters agreed with statements relating to how an intervention demonstrates elements of flexibility in terms of where they are delivered and how (88%), and meets patients' preferences (81%). These were also the two most important statements in the priority voting (23% in both cases). The least important statement in the priority voting related to the need for interventions to align with clinicians' beliefs and values (8%).

Responses were more mixed for statements relating to the need for an intervention to align with: clinicians' beliefs and values (49% agreed, 36% disagreed and 15% neutral); health policy (69.5% agreed, 26.5% disagreed and 4% neutral); and patient expectations (68% agreed, 16% disagreed and 16% neutral). Whilst almost 70% of participants agreed that an intervention should enhance care without disrupting the equipoise within a general practice, more than 20% of participants disagreed with this recommendation statement. Verbal comments suggest that the contextual, situational nature of the statements made voting on this statement difficult and, again using the example of implementing a patient safety intervention, where implementation may take place regardless of the level of disruption to other services within a practice. Another verbal comment highlighted how this recommendation may be specific to general practice and that any new way of working or intervention had to enhance care for one condition or group of patients whilst also demonstrating parity or fairness to others.

Table 17 Nature of the intervention results

Recommendation statement	n=agreeing (%)								Priority ranking 1 = most important (% voting most important)
	Total % agree	Strongly agree	Agree	Somewhat agree	Neutral	Somewhat disagree	Disagree	Strongly disagree	
Nature of the intervention									
Those driving and leading implementation need to demonstrate to stakeholders that the intervention:									
a. Offers flexibility in whom it is delivered by, where it is delivered and how	88	11(42)	8(31)	4(15)	1(4)	2(8)	0	0	1 (23%)
b. Offers flexibility in meeting a range of patient preferences	81	8(31)	11(42)	2(8)	1(4)	4(15)	0	0	1 (23%)
c. Aligns with clinician beliefs and values	49	4(15)	4(15)	5(19)	4(15)	3(13)	6(23)	0	5 (8%)
d. Aligns with health policy	69.5	2(8)	7(27)	9(34.5)	1(4)	4(15)	2(7.5)	1(4)	3 (15%)
e. Aligns with patient expectations	68	5(20)	3(12)	9(36)	4(16)	3(12)	0	1(4)	2 (17%)
f. Offers opportunities to enhance care without disrupting the 'equipoise' within a general practice	69	5(19)	6(23)	7(27)	2(8)	0	4(15)	2(8)	4 (14%)

(statements for 75% or higher level of agreement = row coloured blue)

Appealing to a range of priorities (Table 18)

Over 75% voters agreed with statements relating to implementation appealing to patient priorities (100%), commissioning priorities such as cost-saving or reducing referrals (96%), and practice priorities such as targets (88%). These were also the three most important statements in the priority voting.

Responses were more mixed for the statement relating to the need for implementation to appeal to a range of clinician priorities (72% agreed, 20% neutral and 8% disagreed).

Table 18 Appealing to a range of priorities results

Recommendation statements	n=agreeing (%)								Priority ranking 1 = most important (% voting most important)
	Total % agree	Strongly agree	Agree	Somewhat agree	Neutral	Somewhat disagree	Disagree	Strongly disagree	
Those promoting adoption of implementation within a general practice need to appeal to a range of different priorities including;									
a) Individual clinician priorities including CPD, appraisal	72	3(12)	9(36)	6(24)	5(20)	0	1(4)	1(4)	4 (18%)
b) Patient priorities	100	8(32)	11(44)	6(24)	0	0	0	0	2 (29%)
c) Practice priorities including targets	88	5(20)	7(28)	10(40)	3(12)	0	0	0	3 (23%)
d) Commissioning priorities such as cost savings or reducing referrals	96	10(38.5)	5(19)	10(38.5)	1(4)	0	0	0	1 (30%)

(statements for 75% or higher level of agreement = row coloured blue)

Overall priority areas (Table 19)

Understanding context and appealing to a range of priorities were voted as the highest priority areas by the consensus participants.

Table 19 Overall priority areas results

Overall importance for successful implementation	Priority ranking 1 = most important (% voting most important)
Understanding the context in which the innovation is to be implemented	1 (18%)
Mobilising knowledge that appeals to a range of priorities	1 (18%)
Implementation planning	2 (16%)
The intervention/innovation	3 (14%)
Characteristics of the knowledge mobiliser	4 (13%)
Approaches to knowledge mobilisation	5 (12%)
The role of the knowledge mobiliser	6 (9%)

9.3.3 Refinement of recommendations and final toolkit development

Given that a cut-off point of 75% was agreed *on 'a priori'* for this exercise, a total of 21 recommendation statements were included in the toolkit as 'action' statements. The 21 recommendation statements with a level of agreement of 75% or more are shown in Table 20. These were included in the toolkit as 'action' statements. The remaining ten recommendation statements (Table 21), were discussed in conjunction with any relevant written or verbal comments with the study team to determine reasons for including in the toolkit as 'action' or 'consider' statements. The decisions relating to the rewording of recommendation statements from the toolkit are shown in Table 21.

Table 20 The 21 recommendation statements that obtained 75% (or above) agreement

Typology category	Recommendation statement	% agreement
Approaches to knowledge mobilisation	When implementing in primary care, offer knowledge mobilisation approaches that utilise a range of different types and formats of knowledge, (including guidelines, experience, tacit knowledge and case stories)	96
	When implementing in primary care, offer knowledge mobilisation approaches that provide opportunities for reflection and feedback	92
	When implementing in primary care, offer knowledge mobilisation approaches that are delivered by credible knowledge brokers	84
The knowledge mobiliser role	Involve individuals who are part of multiple networks as knowledge mobilisers	96
	Involve all key stakeholders in knowledge mobilisation (for example clinicians, commissioners, patients, public)	96
	Identify a trusted, credible individual to lead implementation at each beacon site	85
	Define the role and responsibilities of dedicated knowledge mobilisers at the beginning of implementation	78
Understanding Context	Those promoting implementation within a general practice organisation need an understanding of culture in the practice, including attitudes to change and change fatigue	100
	Those promoting implementation within a general practice need an understanding of leadership and decision makers	96
	Those promoting implementation within a general practice organisation need an understanding of the characteristics and skill mix of the practice staff	96
	Those promoting implementation within a general practice organisation need an understanding of the characteristics of the practice network (for example whether it works in isolation or in a locality group of practices)	96
	Those promoting implementation within a general practice organisation need an understanding of the characteristics (and needs) of their patient population	92

Continued over page

Table 20 Continued

Typology category	Recommendation statement	% agreement
Implementation planning	Determine the approach to evaluation, including consideration of relevant outcome data that meets the needs of all stakeholders, at the planning stage	96
	Involve patients in implementation and evaluation planning	92
	Offer dedicated time for a whole practice approach to implementation planning including all stakeholders such as clinicians, practice managers, and administrative staff	89
	Determine the approach to sustainable implementation at the outset	76
Nature of the intervention	Those who are driving and leading implementation need to be able to demonstrate to stakeholders that the intervention offers flexibility in whom it is delivered by, where it is delivered and how	88
	Those who are driving and leading implementation need to be able to demonstrate to stakeholders that the intervention offers flexibility in meeting a range of patient preferences e.g. to self-manage	81
Appealing to a range of priorities	Those promoting adoption of implementation should appeal to patient priorities	100
	Those promoting adoption of implementation should appeal to commissioning priorities such as cost savings or reducing referrals	96
	Those promoting adoption of implementation should appeal to practice priorities including targets	88

Table 21 The 10 recommendation statements that obtained less than 75% agreement and decisions regarding refinement

Typology category	Original recommendation statement	% agreement	Decision
Approaches to knowledge mobilisation	When implementing in primary care, offer knowledge mobilisation approaches that are grounded in a theoretical approach	73.5	Re-word to 'action' statement: <i>When implementing in primary care, utilise knowledge mobilisation approaches that are grounded in theory</i>
	When implementing in primary care, offer knowledge mobilisation approaches that are face to face	65	Re-word to 'consider' statement: <i>When implementing in primary care, consider knowledge mobilisation approaches that are face to face</i>
	When implementing in primary care, offer knowledge mobilisation approaches that involve the whole general practice	67	Re-word to 'consider' statement: <i>When implementing in primary care, consider knowledge mobilisation approaches that involve the whole general practice</i>
The knowledge mobiliser role	Knowledge mobilisation should be driven by key decision makers in an organisation (for example manager, or someone in a senior role)	45	Re-word to 'consider' statement: <i>Consider including key decision makers within an organisation as knowledge mobilisers (for example a manager or someone in a senior role)</i>
	The knowledge mobiliser role needs to be explicit (for example acknowledged in job specifications)	74	Re-word to 'consider' statement: <i>Consider making the knowledge mobiliser role explicit (for example included in job specifications)</i>

Table 21 continued over page

Typology category	Original recommendation statement	% agreement	Decision
Nature of the intervention	Those who are driving, and leading implementation need to be able to demonstrate to stakeholders that the intervention aligns with clinician beliefs and values	49	This was a prominent theme in the systematic review and interview data which needed to be represented in the toolkit. Re-word as action statement with additional context: <i>If an innovation requires clinician's behaviour change, knowledge mobilisers need to be able to demonstrate to stakeholders that the intervention aligns with clinicians' beliefs and values</i>
	Those who are driving and leading implementation need to be able to demonstrate to stakeholders that the intervention aligns with health policy	69.5	Re-word as 'consider' statement: <i>Knowledge mobilisers should consider demonstrating to stakeholders that the intervention aligns with health policy</i>
	Those who are driving and leading implementation need to be able to demonstrate to stakeholders that the intervention aligns with patient expectations	68	This was a prominent theme in the empirical data but may be less relevant if patients are actively involved in the process. Re-word as 'consider' statement: <i>Knowledge mobilisers should consider demonstrating to stakeholders that the intervention aligns with patient expectations</i>
	Those who are driving and leading implementation need to be able to demonstrate to stakeholders that the intervention offers opportunities to enhance care without disrupting the 'equipoise' within a practice	69	Re-word as 'consider' statement specifically for general practice: <i>Knowledge mobilisers should consider demonstrating to stakeholders that the intervention offers the opportunity to enhance care without disrupting the 'equipoise' or parity of other services offered within the practice</i>

Table 21 continued over page

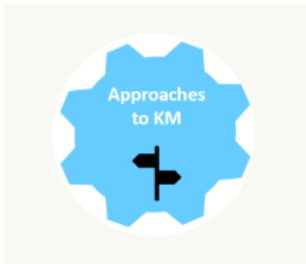
Table 21 continued

Typology category	Original recommendation statement	% agreement	Decision
Appealing to a range of priorities	Those promoting adoption of implementation within a general practice need to appeal to a range of different priorities including individual clinician priorities including CPD, appraisal	72	Re-word as 'consider' statement: <i>If an innovation requires clinician's behaviour change, then knowledge mobilisers should consider appealing to clinician priorities such as CPD or appraisal.</i>

Error! Reference source not found. presents the final toolkit, which has been designed in booklet format but presented over several pages below. The 23 'action' statements and 8 'consider' statements have been condensed whilst maintaining the wording identified in the previous exercise.



6 Key Areas



Several different approaches to knowledge mobilisation may optimise implementation



The knowledge mobiliser is the person who moves knowledge to where it is most useful, but who are they and what is their role?



It is important that those who are promoting implementation have a detailed understanding of general practice context



Consider and demonstrate the 'fit' of the intervention within a general practice



Who should be involved and what factors should be considered at the planning stage of implementation?



To optimise implementation success, knowledge mobilisation should appeal to individual and organisational priorities

Figure 21 The Knowledge Mobilisation Toolkit

Recommendations



Approaches to knowledge mobilisation

- When implementing in primary care, offer knowledge mobilisation approaches that:
 - utilise a range of different types and formats of knowledge, (including guidelines, experience, tacit knowledge and case stories)
 - provide opportunities for reflection and feedback
 - are delivered by credible knowledge brokers
 - are grounded in theory
- When implementing in primary care, consider knowledge mobilisation approaches that are face-to-face and involve the whole general practice



Figure 21 The Knowledge Mobilisation Toolkit

(continued over page)



The knowledge mobiliser role



INVOLVE

- Individuals who are part of multiple networks as knowledge mobilisers
- All key stakeholders in knowledge mobilisation (e.g. clinicians, commissioners, patients, public)

IDENTIFY a trusted, credible individual to lead implementation at each beacon site

CONSIDER

- Including key decision makers within an organisation as knowledge mobilisers (e.g. a manager or someone in a senior role)
- Making the knowledge mobiliser role explicit (e.g. included in job specifications)

DEFINE the role and responsibilities of dedicated knowledge mobilisers at the beginning of implementation

Figure 21 The Knowledge Mobilisation Toolkit

(continued over page)

Understanding Context

Those promoting implementation within a general practice organisation need an understanding of:



- Culture in the practice including attitudes to change and change fatigue
- Leadership and decision makers
- The characteristics, needs, and skill mix of the practice staff, the practice network, and the patient population



Implementation Planning

INVOLVE patients in implementation and evaluation planning

DETERMINE the approach to sustainable implementation and evaluation (including relevant outcome data for all stakeholders), at the outset

OFFER dedicated time for a whole practice approach to implementation planning including all stakeholders such as clinicians, practice managers and administrative staff



Figure 21 The Knowledge Mobilisation Toolkit

(continued over page)



Nature of the intervention



Those who are driving and leading implementation need to be able to demonstrate to stakeholders that the intervention offers flexibility in:

- whom it is delivered by, where is it delivered, and how
- meeting a range of patient preferences e.g. to self-manage

If an innovation requires clinician's behaviour change, knowledge mobilisers need to be able to demonstrate to stakeholders that the intervention aligns with clinicians' beliefs and values

Knowledge mobilisers should consider demonstrating to stakeholders that the intervention aligns with health policy and patient expectations

Knowledge mobilisers should consider demonstrating to stakeholders that the intervention offers the opportunity to enhance care without disrupting the 'equipoise' or parity of other services offered within the practice



Figure 21 The Knowledge Mobilisation Toolkit

(continued over page)

Appealing to a range of priorities



Those promoting adoption of implementation should appeal to patient priorities, commissioning priorities (such as cost savings or reducing referrals), and, practice priorities (including targets)



If an innovation requires clinician's behaviour change, then knowledge mobilisers should consider appealing to clinician priorities such as CPD or appraisal

From
research to primary care: a knowledge mobilisation study in osteoarthritis (Swaithes, L.)
<https://piktochart.com/blog/>

powered by
 **PIKTOCHART**

Figure 21 The Knowledge Mobilisation Toolkit

9.4 Discussion

9.4.1 Summary of main findings

The findings of this stakeholder engagement consensus exercise indicate that the recommendations included in the toolkit have face validity and are acceptable to stakeholders. A toolkit that aims to optimise KM for OA in primary care has been developed.

The recommendation statements included in the toolkit address both the planning and the 'doing' of KM in primary care. The consensus exercise determined that a total of 23 'action' statements are included in the toolkit and eight 'consider' statements. The two areas with the highest levels of agreement (for priority) concerned understanding the local context in which an intervention is to be implemented and the ability to appeal to a range of priorities. The areas that received the least levels of agreement were appealing to clinicians' priorities and whether KM should be led by senior individuals within an organisation such as managers.

Whilst many elements of the recommendation statements are grounded in existing literature and theory, the stakeholder engagement consensus exercise provided a further opportunity to obtain feedback from experts in the field regarding recommendation statements that were more novel. To the candidate's knowledge, this is the first study to generate KM recommendations for primary care using consensus methods with commissioners, clinicians, and patients.

9.4.2 Comparison with existing literature

Statements receiving less than 75% agreement

The findings relating to the ten recommendation statements that obtained less than 75% agreement may be explained by the nature of the recommendations being generated from key findings related to either MOSAICS and/or JIGSAW which may not be generalisable or transferable across all contexts. For example, offering KM approaches that are face to face which 35% of participants were either neutral or disagreed with. The findings also illustrate the potential difficulty for stakeholders interpreting some of the statements, for example, the term 'driving' KM implies the notion of leadership which stakeholders may not be aware of or, this may reflect an issue that is specific to OA.

Face-to-face approaches to KM may be challenging to scale up due to resource requirements and time pressures faced by healthcare staff. Other studies have reported successful KM without adopting face-to-face approaches. For example, in the field of education, Jones et al. (2015) report the need to mobilise knowledge through processes that enable cost-effective methods for scaling up small scale research. The authors discuss a model of KM that utilises web-based e-infrastructure to mobilise research knowledge to key stakeholders internationally. They suggest that the innovative use of technologies, such as an online CoP network, improves the link between research and practice.

KM implementation strategies in healthcare often adopt face-to-face approaches such as training sessions or educational workshops due to the nature of behaviour change interventions, although computerised decision

support systems and prompts have also been used, sometimes in combination with face-to-face methods (Kloek et al., 2017, Castiglione and Ritchie, 2012, Lineker et al., 2011, Ogundele, 2011, Grimshaw et al., 2004). New modes of delivery of these interventions that combine therapeutic guidance from clinical guidelines with online care have been tested although the implementation of these has not yet been reported (Kloek et al., 2019, Kloek et al., 2018, Kloek et al., 2017). In addition, online Learning packages, developed by the Registered Nurses' Association of Ontario (RNAO) aim to encourage the implementation of best practice guidelines for a range of conditions including assessment and management of pain in the elderly, diabetes care and oral health (available at <https://rnao.ca/bpg/implementation-resources>).

The notion of 'face-to-face' presented in the consensus exercise may have been interpreted differently by participants and could allude to a range of approaches including skype or a 'round the table' discussion. A clearer definition of 'face-to-face' may have been useful for participants. It is postulated that online resources may have been seen as more cost-effective, time-efficient and practical, which has been reported for CPD activity (MacWalter et al., 2016).

Other examples where less than 75% agreement was obtained may also be associated with the context of MOSAICS and/or JIGSAW. These include involving the whole general practice organisation and maintaining equipoise within a practice when implementing a new way of working. These recommendations may not be possible or appropriate in different settings or with different implementation projects. However, in the context of this work

(OA), engagement of whole practice staff and recognising other pressures and priorities faced with the practice were key to optimising implementation. (Baird et al., 2016).

Another plausible explanation for the levels of lesser agreement with certain statements is that stakeholders may not yet appreciate the importance of the findings generated in this thesis in relation to successful KM. Despite a clinical representation in the audience, the stakeholder participants in this study did not prioritise or agree, that appealing to clinicians' priorities was important in optimising KM. Several reasons may explain the discordance. For example, stakeholders may assume that adopting best practice recommendations is enough to facilitate implementation. The view that evidence for best practice is enough to bring about change may be naive considering how the systematic review and interview data illustrated clinicians' beliefs and values to be hugely important and had the potential to be either a driving force or barrier to implementation. It would, therefore, be prudent for this recommendation to counteract any assumptions that clinicians' beliefs and priorities are not important, and for this reason, despite the low percentage agreement, the statement was amended to be an 'action' statement.

Many of the recommendation statements are grounded within and commonly reported in KM and implementation literature. For example, the need to understand the context whereby implementation is to take place is a central component of many implementation theories, models and frameworks (Harvey and Kitson, 2016, Lau et al., 2016, Kitson et al., 1998). Understanding the influence of contextual characteristics has been identified as an essential activity in other KM studies (Ward et al., 2012, Dobrow et al., 2006). Similarly, factors relating to the nature of the intervention to be implemented are recognised in the 16-item interactive NPT toolkit (available at www.normalizationprocess.org/npt-toolkit) (May et al., 2015).

The results highlight the importance of researchers and knowledge mobilisers understanding the patient target population and involving patients and the public need to be involved in decision making. This aligns to a body of literature relating to patient involvement in research and decision making, as is being highlighted in an emerging field of PPIE in quality improvement and KM (Cheraghi-Sohi et al., 2013, Jinks et al., 2013, Armstrong et al., 2013). Understanding patients' needs was voted as the highest priority recommendation for understanding context which raises interesting issues regarding the sphere of influence that patients and the public have in implementation activity. Many theoretical approaches to KM do not explicitly include patients and the public which is interesting considering the findings yielded in this thesis. Given the comments from this event that related to how patients may be overlooked, it may be necessary to reflect the role of PPIE in KM in both theory and policy.

In contrast, some of the recommendation statements, relating to the process of KM and the role of the knowledge mobiliser were more novel and so the stakeholder engagement consensus exercise provided an opportunity to develop an understanding based on stakeholder voting and feedback. Voting responses were mixed regarding the role of the knowledge mobiliser and findings illustrate the uncertainty associated with whether KM should be driven by key decision makers in an organisation (for example manager, or someone in a senior role). The participants largely agreed that KM was 'anybody's role', suggesting that participants endorsed a collaborative approach involving all key stakeholders, including patients.

A body of literature exists which describes how knowledge is mobilised (Ward, 2017) and the explicit roles of knowledge brokers and boundary spanners (Bornbaum et al., 2015, Currie et al., 2007), however, a novel finding from this work relates to the implicit role/nature of knowledge mobilisers and whether this may be advantageous. For example, by the perceived value of 'ad-hoc' informal conversations with trusted colleagues facilitating KM. In addition, there may be significant challenges associated with formalising the role both at an individual and organisational level. A potential reason for the ambiguity is that 'knowledge mobiliser' is a relatively poorly understood and defined term. This provides additional insight into the facilitation domain of the i-PARIHS framework and identifies areas where additional research may be required.

The viewpoint that all stakeholders have the potential to be knowledge mobilisers highlights how the knowledge mobiliser role may exist on a continuum or spectrum and to optimise successful KM, there is a need to

involve many knowledge brokers from different professional and lay positions.

9.4.3 Strengths and limitations

The consensus exercise achieved the intended aim to determine the acceptability and face validity of the draft recommendation statements by key stakeholders. The inclusion of a broad range of opinions from commissioners, managers, HCPs, and patients in the consensus exercise represents a strength of this study. Furthermore, data collection was conducted at a national event, attended by individuals from commissioner and provider organisations across widespread regions in England. This provided an excellent opportunity to evaluate the recommendation statements with a broad group of stakeholders.

Engaging stakeholders is suggested to empower patients, facilitate evidence uptake, ensure outcomes are more relevant to end users and facilitate the capacity development of champions (Boaz et al., 2018, Ocloo and Matthews, 2016, Oliver et al., 2014). However, stakeholder consultation has been reported as tokenistic and less powerful than co-production whereby stakeholders are seen as equals with meaningful engagement (Ocloo and Matthews, 2016). Despite criticism in the literature, there are several strengths to the stakeholder consultation approach adopted in this study.

The approach to developing the final toolkit was based on principles of the methodology used by EULAR by gaining stakeholder agreement on recommendation statements (van der Heijde et al., 2015). Despite stakeholders not being pre-specified for this exercise as advocated by EULAR (van der Heijde et al., 2015), opinions were sought from a range of stakeholders. These views, along with research evidence and research team discussion and debate have been used to develop the toolkit (NICE, 2014a).

The development of the evidence-based recommendation statements and subsequent toolkit involved both inductive and deductive reasoning. Statements were derived from, and are therefore grounded in empirical evidence collected as part of the prior stages of this thesis (inductive), and were also drawn from or supported by theoretical principles (deductive) (NICE, 2014a).

The findings of this study were condensed back to statements with multiple components for inclusion in the toolkit. Whilst EULAR advocate a maximum number of ten statements as too many statements are suggested to result in a lack of focus and pose challenges to implementation, it was important that the toolkit developed in this thesis presented an accurate representation of the data (van der Heijde et al., 2015). Future research is required to evaluate the use of the toolkit.

A potential limitation to the study is the method of recruitment. Attendance at the national KM event was by invitation only and there is the possibility that some key individuals who could have added valuable opinion to the consensus exercise may have been missed. However, the findings of the consensus exercise are relevant to musculoskeletal health in the NHS primary care setting. Furthermore, details relating to the demographics of the participants were not collected. Understanding the role and level of experience of participants may have been beneficial when interpreting the results, yet the broad range of professional and lay attendees provides confidence in the opinions obtained.

Whilst the priority voting exercise (round two) reinforced findings relating to the perceived importance of clinicians' values, beliefs and priorities, on

reflection, the inclusion of this exercise at the event provided few additional insights to the agreement voting (round one) that impacted the development of the toolkit. The priority voting was, however, most useful for the recommendation statements relating to understanding context (Table 15) whereby all statements achieved 75% and higher agreement, therefore the priority voting provided additional insights into the most important recommendation statements within this section.

Whilst an additional focus group or more in-depth stakeholder consultation as advocated by NICE (2014a) may have yielded rich feedback to inform the recommendations, this was not practicable. Although anonymous feedback was sought at the event, this was limited, and more in-depth qualitative data would have been helpful in better understanding the transferability of the recommendation statements. In addition, qualitative feedback may have added value to the study by exploring the reasons why participants voted the way they did, thus illuminating some of the nuances within the findings. However, the feedback captured on the day provided ample information for critical reflection and consideration regarding the final toolkit.

On reflection, due to the tight timeline, not all the recommendation statements were presented as 'action' statements for the consensus conference and so some of the statements had to be slightly amended for the toolkit. Close attention was therefore paid to the wording of the recommendation statements to ensure clarity and a true reflection of the lessons learnt from the MOSAICS to JIGSAW journey and the data collected as part of this thesis.

The notion of clinical academic collaboration was not incorporated in the recommendations for the stakeholder engagement consensus exercise, as it was a late emerging theme and so is now represented in the context to the toolkit. These new insights may contribute towards obtaining a KM 'sweet spot' whereby the combination of factors or ingredients, that have not previously been identified collectively, provide optimal impact and maximum response.

Another potential limitation to the study was setting the bar for the level of agreement for 'action' statements at 75%. However, the stakeholder engagement consensus exercise did not concern the inclusion or exclusion of recommendations but focussed on the wording of statements. Following the consensus exercise, an analysis of the number of recommendations which would result from the cut off for consider/action statements being set at differing levels of agreement was undertaken. Informed by the principles of Porcheret et al. (2013b) this was done to explore the potential difference this could have made to the study. The distribution of the results shows that only two outliers fall below the 60% level of agreement, illustrating high levels of stakeholder agreement with most of the statements.

Whilst this was beyond the scope of this thesis, EULAR recommends the development of a lay version of recommendation statements. Following the consensus exercise, a meeting was convened with the LINK group to discuss the toolkit. The group felt that the toolkit could be used by a range of stakeholders including patients and could be used as a checklist, a self-assessment tool or an evaluative tool. Creating a lay toolkit is a potential consideration for future work, however, feedback from the LINK groups was

positive and patients and the public have been involved throughout the thesis and were part of the conference consensus.

An explicit rationale for the inclusion of recommendations in the toolkit, and the aims of the toolkit, described in this chapter has been provided as advocated by Barac et al. (2014). The importance of evaluating the design of toolkits and their implementation has been recognised (Barac et al., 2014). Whilst this was not within the scope of this thesis, this presents an opportunity and important consideration for future work. Next steps may also include exploring the design, value, and utility of the toolkit.

9.4.4 Implications for research and practice

A criticism of toolkits identified by Yamada et al. (2015) is the lack of detail regarding their implementation process and outcomes. There are several ways in which future research could address this. Obtaining more in-depth qualitative feedback on the recommendation statements in the toolkit may help understand which statements are generalisable to other contexts. In addition, evaluating the use of the toolkit in real-life KM projects in primary care may provide further insights into the ways in which it is applied and the recommendations that are most beneficial. To assess its use and evaluate its effectiveness, further work focussed on understanding the experiences of those who have used the toolkit, the context in which it has been used and the potential impact is required. Although the context of the toolkit won't vary, the presentation, dissemination, and implementation may do for different audiences. Therefore, future collaborative work with the LINK group could evaluate the design, presentation, and utility of the toolkit along with the dissemination strategy.

The findings of this chapter have informed a national publication entitled 'Top 10 Tips for Implementation' for the Council for Allied Health Professional Research (CAHPR) (Appendix 20)²⁶. The candidate has also received requests from researchers at Keele University and the Chartered Society of Physiotherapy (CSP) for the sharing and use of the toolkit.

²⁶ Available at https://cahpr.csp.org.uk/system/files/documents/2019-09/16_implementation_for_Impact_0.pdf

9.5 Conclusion

This chapter has presented the results of a stakeholder engagement conference consensus exercise that built on prior stages of this thesis to inform the development of a toolkit for KM in primary care based on empirical evidence. The conference consensus exercise comprised the final step of the triangulation protocol and toolkit development. This study has identified that the recommendations within the toolkit have face validity and are acceptable to stakeholders. Several of the recommendation statement themes are grounded in the literature base, such as the importance of understanding context and appealing to a range of priorities. Components of the themes relating to the role of the knowledge mobiliser and PPIE appear to be more novel and contextualised.

The toolkit presents clear and specific considerations for KM action to promote use and collaboration with professional groups. Consultation with the lay representatives in the LINK group suggests that the toolkit is suitable for a wide audience. This study adds to the existing literature on implementation in primary care by identifying key areas that may be useful when implementing musculoskeletal interventions.

The findings of this chapter have informed a national publication for the CAHPR network (Appendix 20). Further work is needed to provide an in-depth understanding of the statements that received lesser agreement such as the use of face to face KM approaches and appealing to clinician priorities, and, to evaluate the application of the toolkit empirically in practice in primary care. Ongoing collaboration with the LINK group will evaluate the

presentation of the toolkit and inform the dissemination strategy. The following chapter presents the discussion and conclusions of the thesis.

Chapter 10: Discussion and Conclusion

10.1 Introduction

The primary aim of the work presented in this thesis was to explore the process of KM, and identify lessons learnt from a research study and implementation project, which sought to optimise the care and management of OA in primary care. Furthermore, this thesis aimed to develop a toolkit to optimise KM of innovations for OA in primary care with a range of stakeholders (including clinicians, researchers, patients, and the public). A series of four empirical sub-studies (systematic review, analysis of focus group data, individual interviews and a triangulation protocol including a stakeholder engagement consensus exercise) have provided unique insights into a) the available qualitative literature in implementation of evidence-based guidelines for OA in primary care, b) the transition from a clinical research trial into real-world implementation, and, c) understanding uptake of an evidence-based innovation in the real-world, which together, enabled the content of a toolkit to be developed.

In this final chapter, reflections on the key findings relating to the factors that optimise KM in primary care are presented, and the strengths and limitations of the thesis are discussed. Findings are summarised with reference to implications for practice and further research prior to the chapter conclusions.

10.2 Summary of thesis objectives, methods used, and key findings

The two overarching research aims of this thesis were undertaken by addressing seven more detailed objectives. The following section presents the two aims of the thesis along with a summary of the seven objectives, methods used to address them, and key findings.

10.2.1 Exploring the process of KM and identifying lessons learnt from a research study (MOSAICS) and implementation project (JIGSAW)

To address the first objective of this thesis (section 1.7 page 16), to review and appraise existing KM theoretical frameworks and select one or more to aid the analysis and interpretation of data in this thesis, Chapter 2 presented four theoretical approaches (NPT, CoP, ACAP and i-PARIHS) that can help to explain and understand KM. These were discussed with reference to use in practice and relevance for this thesis. The i-PARIHS framework was selected as an underpinning theoretical approach for this thesis.

To gather views from stakeholders on the current evidence base for KM and implications of this for primary care practice (objective 2), first, a review of evidence from two systematic reviews of reviews exploring the evidence to practice gap in primary care, conducted by Lau et al (2015; 2016), was undertaken (reported in Chapter 3). This provided an overview of current understanding for this thesis. A paucity of systematic review evidence, and, the need to better understand the empirical evidence, in the field of implementation for OA in primary care were identified. Uncertainty relating to the contextual and organisational factors that influence implementation was also identified. The findings illustrated a need for qualitative, theory

driven research that explores the ownership of KM and the potential role of patients and the public in KM. The findings of the work by Lau and colleagues (2016) classify the barriers and facilitators to implementation into four levels: external context, organisational, professional and intervention. These factors were discussed in a stakeholder advisory group with a broad range of stakeholders. The stakeholder group suggested that an empirical and theoretical focus on the context was necessary for this thesis, and that the ownership and roles relating to KM, along with the skills of the implementer or implementation team were important.

Chapter 4 presented the conduct and results of a systematic review and thematic synthesis which aimed to investigate factors that influence the implementation of evidence-based guidelines for OA in primary care (objective 3). The systematic review identified factors such as, best practice was not enough to ensure buy-in to implementation, and, that whole practice engagement was important as it enabled implementers to be cognisant of potential drivers and motivators for implementation in primary care. Patient preferences [for self-management], or *perceived* patient preferences, were shown to have the potential to influence implementation and a range of patient values, beliefs, and expectations were highlighted. The findings illustrated the challenges of researching implementation in trial conditions and the need for further qualitative research to explore processes and mechanisms for implementing research innovations into clinical practice at the end of a trial.

To evaluate KM activity to share practice-based learning and to understand early adoption from a research trial (objective 4), a thematic analysis of

previously conducted focus group data was undertaken. The focus groups were conducted with the control practices from the MOSAICS trial prior to the conceptualisation of this thesis. The original aim of the focus group study was to (i) investigate how the delivery of a training package post-trial promoted and enabled changes in care for patients with OA in the control practices of the MOSAICS trial, and (ii) understand to what extent a group discussion contributes to thinking about changes in practice. The data were pertinent to this thesis as following the conduct of the focus groups, one of the practices involved in this process went on to be the catalyst for the JIGSAW implementation project.

The analysis of the focus group data (reported in Chapter 6) provided insights into the circumstances around the transition between completion of the MOSAICS trial and implementation in real-world primary care as part of JIGSAW. The findings illustrate how knowledge was mobilised at an organisational level post-trial and how this had the potential to optimise implementation. The potential value of a facilitated focus group discussion with the control group in the implementation process was identified as a way of facilitating the next steps for implementation, which may be of benefit for future trials. Protected time for individual 'headspace' and collective 'practice space', including the opportunity for feedback and reflection, were shown to unlock the potential to enhance KM by enabling primary care practitioners to consider implementation specific to local context. The benefits of facilitating opportunities to co-produce action plans for implementation were illustrated.

To understand the experiences and perceptions of key stakeholders from an OA implementation project to identify the factors that optimised KM

(objective 5), individual interviews with stakeholders involved in the JIGSAW implementation project were conducted (Chapter 7). The findings highlighted that successful implementation was dependent on the facilitation process and the key actors within this, along with a range of contextual factors. The three key dimensions of facilitation that emerged from the findings were academic-clinical collaboration, knowledge mobilisers with access to knowledge networks, and patients and the public. This study highlighted the important role of knowledge mobilisers to facilitate the process and bridge organisational and professional boundaries to optimise implementation. However, conflicting opinions regarding the perceived role of the knowledge mobiliser were identified. The context of organisational systems was found to stymie cross-boundary working and KM. Findings illustrated how facilitation mediated both internal and external contextual factors to engender KM. The interview data highlighted the benefit and impact of PPIE in implementation for one general practice, and how the LINK group played an important role in facilitating implementation. However, uncertainty of the broader role and influence of PPIE in the other practices studied remains.

10.2.2 Developing a toolkit to optimise KM of innovations for OA in primary care

To synthesise findings from the thesis studies and to develop draft recommendations to enhance KM relating to OA in primary care (objective 6), a triangulation protocol was conducted (Chapter 8). Through the process of triangulating the key findings of the systematic review, focus group, and interview data, the nuances of the findings were compared, and a further level of analysis undertaken. The findings were categorised and developed into a typology of the six key empirical domains (approaches to KM, the role

of the knowledge mobiliser, understanding context, implementation planning, the nature of the intervention, and appealing to a range of priorities).

The ability of the knowledge mobiliser(s) to demonstrate that the implementation of JIGSAW offered the opportunity to enhance care for a group of patients without disrupting practice equipoise was identified in the triangulation process as an important facilitator of implementation. In addition, a gap relating to the known preferences and expectations of patients for implementation of OA innovations was revealed, and the importance of these factors when considering implementation of innovations for OA in primary care was highlighted. From the triangulation process, 30 draft recommendation statements, that were grounded in empirical evidence and theory, were developed.

The draft recommendation statements were presented as part of a national KM event in a stakeholder engagement consensus exercise to (i) obtain stakeholder consensus, and, (ii) refine the draft recommendation statements and develop a toolkit to optimise KM for OA in primary care (objective 7). Findings of the consensus exercise (reported in Chapter 9) illustrated that stakeholders felt that everybody has a role in KM and not just key decision makers within an organisation, such as managers. Stakeholders did not rate consideration of clinician preferences as important in KM and implementation, despite the empirical evidence presented in this thesis suggesting a pivotal role.

The following section presents the reflections and considerations from the overarching themes from the thesis findings with reference to existing literature. This is followed by the strengths and limitations of this thesis, the

implications for KM practice and research, and finally, the chapter conclusions.

10.3 Overarching themes

10.3.1 What is knowledge mobilisation in primary care?

It is important to acknowledge the shifting landscape of primary care and of KM as a discipline when considering the findings of this thesis. The primary care landscape was very different at the time of conducting the MOSAICS study in comparison to undertaking this thesis, and furthermore, so was the existence and awareness of KM. When the MOSAICS study was funded, Primary Care Trusts (PCTs) were in place. By the time the MOSAICS research was conducted, Clinical Commissioning Groups (CCGs) were in place, and the implementation of JIGSAW is set in the context of Sustainability and Transformation Partnerships (STPs). At the time of developing the MOSAICS study, KM was not a commonly known concept in the UK, and so it is likely that integrated KM and implementation strategies may not have been considered at the outset of the research.

The KM literature drawn on for this thesis was derived from sociology, education, organisational management and psychology. This may explain some of the complex and overlapping terminology, the plethora of available frameworks and a lack of agreement on the main issues due to the nature of working across disciplines. In addition, the dichotomy of trying to understand KM whilst researching it and mobilising knowledge may pose challenges to researchers and clinicians operating in the space.

Chapter 2 presented the definition of KM for this thesis as:

‘a proactive process that involves efforts to transform practice through the circulation of knowledge within and across practice domains’ (Swan

et al., 2016) which involves a range of activities that encourage the collation and communication of knowledge' (Ferlie et al., 2016, Davies et al., 2015).

By considering the original definition of KM that was adopted in this thesis, attention has been paid to the complexity and nuances of KM throughout the duration of this study. Whilst the definition adopted in this thesis supports the notion that KM comprises an array of intertwined activities across boundaries, it fails to acknowledge the characteristics and mechanisms of collaborative processes, individuals, and groups in mobilising knowledge. These approaches to KM are suggested to increase the relevance and use of research knowledge (Davies et al., 2016, Lomas, 2000).

This thesis has shown how primary care stakeholders give priority to a range and combination of different types and formats of knowledge to formulate decisions relating to implementation. In addition, the findings illustrate how KM is optimised with consideration of specific primary care contextual factors.

The stakeholder advisory group and empirical evidence presented in this thesis have highlighted that KM in primary care needs to 'make it easy for stakeholders to do the right thing'. Aligned to this was the need for research innovations and new models of care to be flexible and fit with existing systems, policy, and processes within a general practice, whilst addressing other professional and organisational drivers. The notion that implementation needs to maintain the balance or equipoise within a general practice is not referred to in implementation theories, models, or frameworks, but is supported by empirical evidence which illustrates how prioritising one condition over another in primary care can be problematic for implementation

as typically, a condition that is supported by the QOF takes preference over other conditions (Armstrong et al., 2016).

In primary care, practice culture, including hierarchy, leadership and decision making, and the presence of change fatigue was reported to play a significant role in the success of the implementation. Practice nurses were integral to implementation in some practices; however, in some instances, practice nurse potential was stymied by the culture within the practice.

The need to appeal to a range of priorities identified in this thesis demonstrates the complexity of KM in primary care. The discordance between the desired evaluation outcomes for academic, commissioning, and patient stakeholders reinforce the need for a reconceptualisation of research and implementation as a single entity. The findings identify the importance of evaluation and sustainability planning early in the process, with all key stakeholders, and how different stakeholders perceived different evaluation measures as important. This emphasises the need for co-production approaches to ensure stakeholder buy-in, and research and innovations that are relevant to the local context, hence translatable into practice (Vindrola-Padros et al., 2019, Ovretveit et al., 2014).

The findings of this thesis have revealed empirical and conceptual insights into the importance of facilitation within KM. Integrating the dimension of facilitation with KM definitions may help to clarify the concept, yet there is a risk that adding to the breadth and depth of terminology and definitions may mean that interpretations become more disparate rather than demystified. The idea of adding to the vast terminology relating to KM is widely critiqued in the literature (Graham et al., 2006). Arguably, of greater importance than

the continual refinement of a definition for KM, is the understanding of the meaning and actions incorporated within it and the recognition that KM may be an overly-complicated term or concept to describe the ways in which high-quality evidence-based healthcare should be developed, delivered, commissioned and understood.

The use of the i-PARIHS framework (Harvey and Kitson, 2016) within this thesis was novel for musculoskeletal primary care research. Mapping empirical data to the domains of the i-PARIHS framework and developing thinking relating to its use has prompted further reflection on key theoretical issues presented earlier in this thesis. This thesis started by considering a conceptual framework by Lau et al. (2016) and a taxonomy developed by Nilsen (2015). The taxonomy is concerned with the planning, doing and evaluating of implementation, however, there appears to be 'more to it' than implementation and for KM in primary care, several elements of facilitation seem to be the key to optimise the process whilst recognising that KM is dynamic. This may be explained by the drivers in primary care and the pressures experienced by HCPs working in general practice which make the implementation of new models of care particularly challenging (Baird et al., 2018).

The findings in this thesis suggest that some theoretical approaches may be better suited to implementation and some more to KM. For example, the i-PARIHS framework has been relevant and applicable for this KM thesis largely due to the facilitation and context domains, however, may not be as suitable for developing and testing a complex intervention in an implementation trial, whereby NPT may be more appropriate (Ong et al., 2014). Considering the

findings of this thesis, the i-PARIHS framework appears to address the next step following an implementation trial to get the innovation adopted in primary care practice by acknowledging the active component of facilitation as a central approach to KM.

10.3.2 The role of the knowledge mobilisers in facilitating KM

One of the main findings of this thesis relates to the role of the knowledge mobiliser, and the interaction between knowledge mobilisers and a range of different types and formats of knowledge, across organisational boundaries, to optimise successful implementation of an innovation.

In contrast to the range of formal and explicit bridging roles reported in the literature, such as knowledge brokers and researchers in residence (Kislov et al., 2017, Davies et al., 2015, Marshall, 2014), this thesis identified how key individuals acted implicitly as knowledge mobilisers, often due to their roles spanning professional or organisational boundaries. Examples of integrated or hybrid roles that facilitated the blurring of boundaries in this thesis included, a GP partner with a commissioning role and clinical or patient champions with an interest in implementation. This suggests that the blurring of organisational and professional boundaries via those with boundary spanning roles is an effective KM strategy, but it is not known if this is more or less effective than formal bridging roles. However, the uncertainty identified in this thesis regarding the role of the knowledge mobiliser is reflective of viewpoints from current literature as to the effectiveness of formal brokering roles (Kislov et al., 2017) and whether a lack of clarity of the role limits effectiveness (Scarborough et al., 2014).

Knowledge mobilisers in this thesis influenced successful implementation by understanding the complex context of primary care, the practice drivers and population needs, as well as the motivators of a range of stakeholders. The importance of understanding and recognising context is acknowledged in the literature relating to KM and implementation across a range of conditions and settings (Lau et al., 2016, Levin, 2008). It is possible however, that the 'sales rep' component of the role was only necessary as the focus of implementation was for OA, which is widely reported as being a low priority for HCPs and patients (Egerton et al., 2016, Paskins et al., 2015, Thomas et al., 2013b). Another potential explanation for these findings is that there is greater need for the knowledge mobiliser role in primary care settings due to the pressures faced by clinical staff. HCPs might lack the capacity or the skills to implement new models of care and may value the input of an individual or team to distil the key components of research findings and package and present these to them in a quick and easy to use format.

In relation to the i-PARIHS framework, this thesis has developed an understanding of the primary care context and the role of facilitation in KM. In this thesis, facilitation was comprised of a combination of academic-clinical collaboration, patients and the public, and knowledge mobilisers with access to knowledge networks. The findings have demonstrated that the external and organisational contextual pressures, drivers and challenges experienced in general practice can be mediated through the complex notion of facilitation.

One of the main findings relating to the academic-clinical collaboration was the importance of a dedicated team of people who were committed to

mobilising knowledge to optimise implementation. Whilst there is a body of literature exploring the partnerships between academic institutions and health services organisations within the NIHR funded CLAHRCs (Rycroft-Malone et al., 2015, Soper et al., 2015), there are several differences between this type of partnership and that reported in this thesis (namely size and funding – see section 7.4.2 for more detail). Novel insights from this thesis relating to clinical academic collaboration and partnerships, and, the unique role that the IAU played in mobilising knowledge within the JIGSAW implementation project were illustrated. These findings support the notion of collaborative co-ordinated working in primary care such as that seen with practice networks (Pearson, 2019) to support implementation.

Models of academic-clinical collaboration have been described as integral to reducing the second translation gap due to the nature of continuing knowledge production and implementation in practice (Lessard et al., 2017), yet there appears to be a paucity of evidence exploring the role and impact of dedicated academic teams such as the IAU reported in this thesis. The findings relating to clinical-academic collaboration occurred later in the analysis process and highlight a novel finding related to developing the capability for shared collaborative working and a potential emerging research and policy agenda.

Feedback from the PPIE and LINK group meetings highlighted the importance of the role of the academic institution in supporting PPIE in both research and implementation. The potential value of involving patients and the public in KM was a novel finding from this work and an additional discussion with

members of the LINK group emphasised the value of the experiences of patients and the public who were involved in KM.

Facilitation was important to transfer knowledge across several boundaries to optimise KM in this study. Not only does facilitation mediate between external and internal (or organisational) context, but findings of this study show that facilitation also mediates the disconnect between academia and clinical practice, and research and the real world. This is illustrated in a conceptual framework which has been further developed from that presented in Chapter 6 (Figure 22).

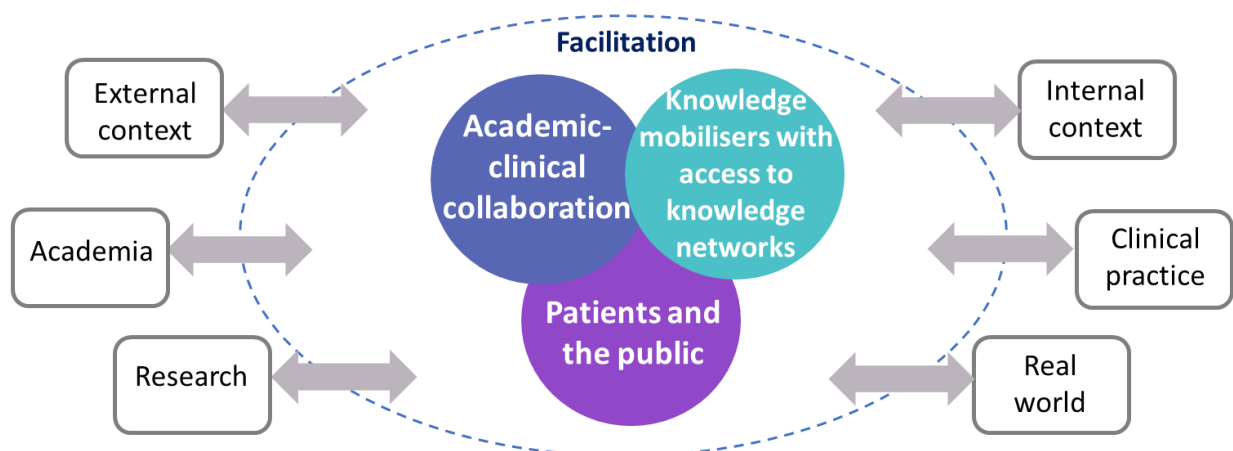


Figure 22 The role of facilitation mediating across boundaries for optimal knowledge mobilisation

10.3.3 Patient and Public Involvement and Engagement and its role in KM

A shift in culture regarding patient and public involvement

Combining elements of KM theory, empirical evidence and stakeholder engagement throughout this thesis, findings relating to the importance and the role of PPIE in KM have been identified. However, in the empirical data, findings relating to the role of PPIE were limited and were mainly for one general practice, therefore some uncertainties remain. A gap has been identified in previous research and implementation work regarding PPIE in KM which may be reflective of the culture shift relating to patient involvement in healthcare.

Whilst the involvement of patients and the public at the earlier stages of the research journey or service design is more commonplace (Jinks et al., 2016, Staniszewska et al., 2017), it appears that PPIE in KM and implementation is recognised as important but may be lagging in practice. The involvement of PPIE representatives is also more commonly reported in research compared to organisational or practice-level involvement (Staniszewska et al., 2017). Boaz et al. (2018) have recently identified a gap in the literature regarding stakeholder engagement which relates to assessing and understanding the impact of stakeholder engagement on research use. Furthermore, findings of this thesis are corroborated by Menear et al. (2012) who report that the implementation of evidence is facilitated by involving patients and tailoring KM for implementation to patient needs.

Whilst the INVOLVE approach exists for guiding PPIE in research, at the start of this thesis there was no available guidance on PPIE in implementation. The

publication of the NIHR national standards for public involvement in research in 2018 (available at (https://www.nihr.ac.uk/news-and-events/documents/Public_Involvement_Standards_March%202018_WEB.pdf)) provides clear and concise benchmarks and indicators for high quality PPIE in research. The six standards provide a framework for reflecting on and improving the purpose, quality, and consistency of public involvement. Whilst the findings of this thesis have illustrated the stakeholder perceptions of the importance of PPIE in implementation and implementation research, their optimal role is uncertain.

The recently published guidance for reporting of patient and public involvement in health and social care research (GRIPP2), can be used to plan and report the aim, focus, and impact of PPIE in research (Staniszewska et al., 2017), however, the applicability of both GRIPP and the NIHR standards to implementation and KM is yet to be determined. The delay in developing and actioning PPIE in KM and implementation may be attributed to the fact that the field of KM is recently evolving.

Considering patients and the public as knowledge mobilisers

This thesis has identified a range of different patient and public groups and networks which influenced KM within the JIGSAW implementation project. Within an academic institution, the development of bespoke structures and process for PPIE in KM had a positive impact on the process and has the potential to affect future policy. In contrast, the mobilisation of knowledge of the JIGSAW approach to the U3A public group, with no structures and processes for KM, was also reported as influential by the nature of social

networks and connections. Other than in one general practice, there was little demonstrable evidence of the impact of PPGs in KM.

Despite the LINK group receiving training specific to KM, there is no evidence from this study that members of the PPG within general practices receive anything similar. It is therefore not clear whether the same individuals that are involved in PPIE for research purposes or within an academic institution can effectively contribute to KM and implementation, or, if individuals have different characteristics and skill sets dependent on the setting in which they operate. The knowledge mobiliser role may, therefore, exist on a continuum of experience and knowledge. To optimise successful KM, there is a need to involve many knowledge brokers from different professional and lay positions with a supportive organisation in situ.

A relative absence of the explicit role of PPIE in KM and implementation theory has been recognised in this thesis. Considering the culture shift and national policy regarding PPIE in healthcare and research, and the stakeholder views presented in this thesis, it appears that patients and members of the public are under-represented in theoretical approaches to KM. For stakeholders to successfully embed KM and PPIE at the start of the research to practice journey, PPIE needs to be reflected in these approaches.

Impact and reflections of the patient and public involvement and engagement in the studies reported in this thesis

The impact and outcomes of PPIE in the study have been reported throughout the thesis. PPIE was perhaps most influential in considering the findings of the interview data in the broader context of the LINK group by illuminating

important issues relating to the infrastructure and support provided by the academic institution.

PPIE was involved in the stakeholder engagement work at the beginning and end stages of the project, in informing the study methods, and in the planning and analysis of interview data, however, the same group of representatives was not used at each stage of the thesis. Furthermore, whilst PPIE helped to identify potential issues and practicalities in mobilising knowledge in primary care, on reflection, PPIE was more centrally embedded in the research component of this thesis but not the KM aspect. It may have been more beneficial, and could have had more impact on the thesis findings, if PPIE were more closely aligned to the research team supervision, to assist throughout all stages of the development and process with a specific focus on KM.

It is important to note that the LINK group at Keele University was established in 2016 at the same time as the thesis project commenced. The group has therefore evolved over the last three years and so reflections and learnings in hindsight may not have been possible at the start of this work as the structure and establishment of the group looked very different to what it does at the time of writing the thesis.

For the write up of publications for this thesis, patient partners will contribute to both academic and lay outputs. Three patient and public representatives have formed a steering group and have already been involved in shaping the candidate's future plans to evaluate the use of the toolkit in a real-time implementation project.

10.4 Strengths and limitations

This section firstly discusses the strengths, followed by the potential limitations, of the methods used in the thesis.

10.4.1 Strengths of the thesis

In relation to the criteria for ensuring quality in qualitative research outlined by Lincoln and Guba (1986), a transparent account of the thesis methods were reported and a reflexive stance adopted throughout the duration of the research. This was to ensure that the findings were trustworthy and that the candidate's professional role and personal values did not influence the results (Bryman, 2008, Yardley, 2000). All phases of data collection and analysis have been recorded and undertaken using systematic, rigorous methods. Detailed records and an audit trail (including memos and field notes) of analytical decisions were kept by the candidate. In addition, the responsiveness to the data and subsequent amendment to the study design mitigated a potential threat to the rigor of the thesis in the early stages (Morse et al., 2002).

This thesis has crossed organisational and disciplinary boundaries to investigate KM for OA in primary care. Previous studies have typically investigated the anticipated or perceived barriers or facilitators to implementation and often focus on professional or individual level factors (Lau et al., 2015). The results presented within this thesis provide new insights into the actual experiences of implementation and address gaps identified in the literature (Lau et al., 2016) by considering organisational-level factors and contextual issues relevant to primary care stakeholders and how these can drive or impede the adoption of new ways of working.

Understanding what actually happens in practice may help to provide more focussed targeted KM strategies.

Stakeholder engagement is suggested to add value to shaping relevant research and to improve research adoption (Morton et al., 2017, Concannon et al., 2014). This research was strengthened by multi-stakeholder involvement in the form of two stakeholder meetings: the first to articulate relevant research and key questions and inform the study design; the second to review preliminary recommendations in the toolkit, along with the involvement of a PPIE group.

Systematic review and thematic synthesis

The systematic review conducted as part of this thesis was, to the candidate's knowledge, the first study to synthesise qualitative literature on the implementation of evidence-based guidelines for OA in primary care. The systematic review included studies that had explored actual barriers and facilitators to implementation rather than perceived factors. A strength of the systematic review was the publication of the protocol on the NIHR Centre for Reviews and Dissemination PROSPERO registry.

Rigorous methods were employed with a 'tried and tested' structured approach that included a comprehensive, systematic search of published literature using predetermined criteria to improve the transparency of the final findings. The review was undertaken by three reviewers whilst following thematic synthesis guidance recommended by Thomas and Harden (2008). The inclusion of two reviewers for the thematic synthesis enabled inter-researcher differences to be examined and discussed, yielded new insights,

made connections between data clearer, and increased the transparency and trustworthiness of the synthesis.

Quality assessment of all of the selected studies was undertaken, informed by the CASP checklist for qualitative research (CASP, 2006), even though studies were not excluded on the basis of quality. The thematic synthesis method of analysis adopted enabled an explicit, transparent synthesis whereby emergent ideas, themes, and concepts were carefully considered. The method facilitated explicit production of new concepts (analytical themes), theory and subsequent conclusions that offer deeper conceptual thinking about factors affecting implementation in primary care which could not have been derived from the primary studies alone (Harden and Thomas, 2005).

Qualitative methods

By exploring the experiences of a range of stakeholders the qualitative findings have represented multiple realities of KM and implementation within the JIGSAW project to help make certain that the thesis findings are credible and authentic (Schwandt et al., 2007, Krefting, 1991). A further strength to this work is that the candidate was simultaneously immersed in both the data and the relevant theory and was able to select and justify an appropriate approach to ensure that the findings could be regarded as trustworthy (Lincoln and Guba, 1986). Conducting data collection and analysis concurrently allowed for important methodological issues to be identified and yielded valuable findings as a result of the snowball sampling (Mays and Pope, 2000a).

The analysis of the focus group and interview data was conducted using a transparent, hybrid approach (Lipscomb, 2012). This allowed for in-depth consideration regarding the selection, use and impact of the theoretical approach for this thesis (Yardley, 2000). In addition, the data analysis and subsequent findings of this thesis have not been constrained by theory as inductive analysis took place without theoretical constructs being imposed on the data in the early stages and a novel contribution to theory has also been achieved.

Developing an iterative coding framework, along with regular memo writing and revisiting data, enabled rigorous cross-checking of codes and themes to ensure they remained consistent and true to the data. Examples of negative or deviant cases were sought, and the datasets were checked for confirmatory or challenging evidence, to ensure that a range of perspectives were represented and enhance the trustworthiness of the findings (Krefting, 1991). Furthermore, the additional consultation and interview data interpretation with the LINK group added value to the study outputs by providing further insight and interpretation of the data, thus enhancing the credibility of the results.

Whilst the focus groups were not conducted by the candidate, the analysis of the focus group data yielded valuable and pertinent results that added value to the thesis by enabling the consideration of findings in the context of the time point at which implementation events took place. Steps were taken by the candidate to ensure trustworthiness such as familiarisation with the data, and regular discussion with the supervisor who conducted the focus group

discussions so that an accurate account of the data was presented (Bryman, 2008, Krefting, 1991).

Deriving and refining recommendation statements and developing a toolkit

The triangulation protocol provided an important methodological bridge between the empirical data collected up to that point and the development of the toolkit. The triangulation of data enabled the opportunity for the candidate to 'cross-check' the findings of the three data sets. Triangulation is advocated as a way of enhancing credibility, confirmability and therefore, trustworthiness of findings by confirming understanding of the social phenomena under study and providing greater confidence in the study results (Schwandt et al., 2007, Bryman, 2008). A key strength of this method is that it drew together several perspectives to address the aims of this work and enabled a deeper, more critical analysis to explore the nuances and better understand the data sets. The development of a typology to further extend and explain the findings, provided additional interpretation of the underlying dimensions of the data analysis to ensure congruence between the concepts and the data (Bryman, 2008). The typology shows that for each domain there are several findings and subsequent recommendations. This enhances the validity of the research as the different methodological approaches produced convergent findings of the same empirical domain (Erzberger and Prein, 1997). Another strength of developing the typology was the identification of key areas which were central to formulating the recommendations.

The inclusion of multiple stakeholders in the consensus exercise, hosted at a national event, represents a strength of this study. A key contribution of the thesis is the development of a toolkit to optimise KM for OA in primary care

and the methods adopted to develop it. The content of the toolkit is grounded in data derived, empirical findings and the approach to developing the final toolkit was based on principles of the methodology used by EULAR by gaining stakeholder agreement on recommendation statements (van der Heijde et al., 2015).

10.4.2 Limitations of the thesis

The main limitation of the thesis is the strong focus of empirical data that was grounded in the MOSAICS study and as a result the transferability of the thesis findings may be limited. This has been addressed by presenting detailed information regarding the context of the MOSAICS study and JIGSAW implementation project, and a description of the primary care context, to provide readers with sufficient information to judge the relevance of the findings for their local setting (Lincoln and Guba, 1986).

In addition, the relatively small geographical area in which the thesis was set may impede the transferability of results. However, studying one region in England has provided new in-depth insights, and a rich account of the circumstances that influenced KM in an exemplar case. Whilst wide variation across primary care in England exists, in terms of system design and staffing models, the findings may be applicable to other primary care organisations as contextual issues are likely to be comparable in other areas. In addition, the challenges of implementing innovations for other conditions requiring a self-management approach, or, conditions that are not incorporated by the QOF, may be similar to those identified in this thesis.

The systematic review highlighted a lack of studies that have employed qualitative methods to explore the experiences of implementing evidence-

based guidelines for OA in primary care. Four studies met the inclusion criteria for the systematic review, three of which were set in the context of MOSAICS. Despite the relatively low number of studies included in the review, the thematic synthesis explored sufficient patterns and concepts that were relevant and contribute to the review, as advocated by Gough et al. (2012). The depth of critical analysis and concepts yielded is a valuable strength of the work that contributes to building the knowledge base. The systematic review highlighted an important gap and the need for future research to combine qualitative process evaluations with trial methods to ensure that research and implementation are not treated as separate entities.

The range of stakeholders that were interviewed for this study is a strength of the work, yet despite this, some potentially influential individuals were not accessed. None of the practice managers identified via the snowball sampling agreed to take part in this study and so possible useful insights may have been missed. This is however consistent with other studies in primary care (Kennedy et al., 2013), and was mitigated by having an emergent, responsive topic guide and including questions regarding the practice manager role in other interviews to try and illuminate any factors for consideration.

The claims made on the basis of the focus group and interview data may require interpreting with caution due to the possibility of response and interviewer bias (Corbin and Strauss, 2014, Bowling, 2009), however, there is evidence in the data that suggests this was not the case. It was not feasible to supplement the qualitative data with observations or documentary analysis. Ethical approval had not been sought at the time that JIGSAW

meetings were conducted for the notes to be used in research. Whilst this illustrates a challenge of researching implementation projects, the analysis of the focus group data provided insights into this important time period and the mechanisms that facilitated KM.

Given that the toolkit has not undergone formal validation, this may be viewed as a limitation. The intended use of the toolkit is however, not as a measurement tool, but as a practical collation of lessons learnt. Often, the array of models and frameworks that are produced for KM and implementation are not subject to specific validation, but the reporting of their use provides a level of validation. Each of the recommendation statements have been reviewed in the light of KM literature and how they apply in the field of OA.

Finally, the findings of the interview study have not been triangulated with any quantitative process measures of implementation, such as frequency of use of the template, guidebook, or nurse consultations. As such, interview respondents accounts of 'successful' and 'unsuccessful' implementation have rather been taken at face value. Due to the time that this study was conceived, when JIGSAW was already established, it was not considered practicable to collect quantitative measures. If the study had been conceived at the planning stages of JIGSAW, it may have been useful and feasible to collect audit data outcomes as part of a mixed methods process evaluation (Moore et al., 2014).

10.5 Implications for KM practice, policy and research

This thesis has identified implications for policy, practice and research for KM and implementation in primary care. The following section presents the implications of the results of this thesis for KM practice and policy, along with a discussion regarding the toolkit. This is followed by a discussion relating to the implications for research and finally, the thesis conclusion.

10.5.1 Implications for KM practice and policy

The viewpoint that implementation occurs at the end of a research study is outdated and inappropriate in modern healthcare. There is a need for academia to respond and adapt to keep up with the rate of change in primary care to produce evidence that is relevant and contextual. Accepting these historical limitations reinforces how the traditional academic model no longer works or 'fits' with modern, real-world KM.

One example of this is the different titles given to the research study and implementation project (MOSAICS and JIGSAW). This reflects the historical perspective commonly adopted in academia, which views the two as separate entities rather than adopting an integrated approach to KM practice for evidence-informed commissioning.

Typically, following the conduct of research studies, funder reports request information regarding dissemination and impact. However, this is rarely costed for or completed as part of the research studies. Changes could be made to the process of planning research applications and applying for funding by both the funding bodies and researchers, to incorporate the next stage of taking the work into the real world. Improvements need to be made

to how academic organisations prioritise, see, and think about the purpose and conduct of research studies to ensure they take the work forward to benefit end users. This culture shift is already happening as evidenced by the Research Excellence Framework (REF)²⁷ rewarding impact case studies in addition to research outputs.

There may be missed opportunities to share practice-based learning gleaned during trials in an attempt to reduce the evidence to practice gap. Approaches, such as process evaluations, offer the opportunity to provide information on issues related to the sustainability of interventions (Moore et al., 2014). Furthermore, these can be communicated to stakeholders throughout the process, rather than waiting until the research is complete, so that issues (intended and unintended outcomes) can be addressed (and circumnavigated) in real-time to ensure maximal impact. In addition, researchers should ensure that contextual research is produced that meets local stakeholder needs and makes a demonstrable, timely impact to the health needs of their local population.

A further important mechanism to drive forward earlier consideration of KM in the research process is via PPIE. PPIE members may arguably be more mindful of the pathway to patient benefit. As part of the NIHR Short Placement Award for Research Collaboration (SPARC), awarded during the conduct of this thesis, the candidate was exposed to other models of KM practice across academic and healthcare settings. In academic practice (at the academic institution which hosted the placement), a model adopted for

²⁷ The system for assessing the quality of research in UK higher education institutions. It is an impact evaluation which assesses the research of British higher education institutions.

supervision of Ph.D. students was observed whereby a patient representative was assigned to every Ph.D. project. The assignment of either a RUG or a LINK group advisor to every Ph.D. student project (or possibly both considering the nature of this thesis) has the potential to enhance KM practice and warrants further consideration for students within the IAU at Keele University.

The KM interface between conducting research and delivering implementation appears to be a poorly understood area. Whilst it is recognised that 'best practice isn't enough', hence why KM exists, the findings in this thesis illustrated that stakeholders failed to recognise this as an issue in practice. National incentives and guidelines for closing the evidence to practice gap (for example NICE guidelines) exist, yet to date, there is no governing body to advise or guide on closing this gap. The stakeholder advisory group (presented in Chapter 3) discussed the notion of who sets and subsequently drives the KM agenda, the priorities for mobilising knowledge into practice and policy, and the potential roles and responsibilities of those involved with KM. A critical view of ownership and capacity for KM is therefore required. The establishment of a governing body is one way in which a KM agenda can be led and driven across clinical, academic and commissioning organisational boundaries.

In examining the relevance and appropriateness of the original definition of KM adopted in this thesis and what this really means in practice, it is important that the characteristics and mechanisms of collaborative processes, and the individuals and groups involved in mobilising knowledge, are recognised. Researcher priorities are often not aligned with what the NHS

needs. Therefore, an integrated, collaborative approach should be adopted, whereby research and implementation are inextricably linked and co-produced with key stakeholders throughout the research to practice journey. An emphasis on a co-production network which enables co-creation of the priorities for stakeholders at the start of KM rather than a co-production cycle that is focussed on individual studies would facilitate this. There is therefore a need to develop the capacity within health systems and academic institutions to work in partnership, develop shared resources and mutual relationships to facilitate the development of practice-based evidence and evidence-informed commissioning (Green, 2008). This will help to bolster the impact of health research and achieve an infrastructure that supports effective KM.

Development of a KM toolkit

This work has enabled the development of a toolkit for optimising KM for OA in primary care which is acceptable to key stakeholders. The toolkit provides practical guidance for consideration by individuals or teams involved in KM and implementation and can be used to guide and support stakeholders in the process. The toolkit reflects how a collection of recommendations, or lessons learnt from the MOSAICS to JIGSAW journey, have been brought together to provide stakeholders with a suite of ideas which can be drawn upon to optimise future work. To date, the toolkit has informed a national governing body publication (the CAHPR Top 10 Tips for Implementation)²⁸

²⁸ Available at https://cahpr.csp.org.uk/system/files/documents/2019-09/16_implementation_for_Impact_0.pdf

(Appendix 20). In addition, there has been a pull from researchers and clinicians to use the toolkit in other studies and in clinical practice.

The Economic and Social Research Council (ESRC) have published an impact toolkit²⁹. Whilst the ESRC toolkit was informed by research and evaluation on effective knowledge exchange and impact, there are several differences between this, and the KM toolkit developed in this thesis. For example, the ESRC toolkit is aimed at social science researchers applying for funding and provides a guide for communicating research work. The KM toolkit does not only focus on researchers but can be used by commissioners, HCPs, primary care managers and patients. The ESRC toolkit has a broader remit than the primary care emphasis of the KM toolkit and focusses on education and public health. The public engagement section of the ESRC toolkit places an emphasis on public engagement in research design and methods rather than KM and implementation. Furthermore, the ESRC toolkit is web-based and includes online resources and links to other relevant sources of information. At this stage, the KM toolkit is a booklet that has the potential to be built upon and developed in future work.

This thesis builds upon the work conducted by Lau et al. (2014) (presented in Chapter 3) by including empirical research evidence in the field of implementation for OA and by conducting and reporting new empirical evidence relating to closing the evidence to practice gap in primary care. One of the unique features of this thesis, which is included in the toolkit, is the importance of PPIE in implementation.

²⁹ Available at <https://esrc.ukri.org/research/impact-toolkit/>

In considering the overarching categories within the toolkit and attempting to define the use of the toolkit, one of the questions raised relates to whether the toolkit is designed for KM or implementation purposes. The toolkit includes categories on the intervention and on implementation planning. In setting out to produce a toolkit that was useful to a range of stakeholders and included all the data derived recommendations, the scope of the toolkit is intentionally broad. Given the definition of KM adopted in this thesis, KM is considered a broader overarching concept which includes implementation and, as described in Chapter 2, the two concepts are intertwined with some similar underpinning assumptions. This is also reflected in the i-PARIHS framework whereby one of the domains relates to the innovation. However, the toolkit is intended to be a flexible aid and prompt of considerations and there may be categories within the toolkit that are not relevant to certain stakeholder groups or projects.

Another consideration for the toolkit is whether it is aimed at optimising KM in primary care, for OA specifically, or for musculoskeletal conditions more generally. Whilst the toolkit was derived from evidence grounded in the context of OA, the recommendations were evaluated with a generic audience of stakeholders from a broad musculoskeletal background. Elements of the toolkit may be applicable across other musculoskeletal or pain conditions requiring a long-term self-management approach, including inflammatory arthritis. Certain elements of the toolkit, however, may not be suitable for optimising KM for conditions that do not present to general practice first e.g. patients with low back pain presenting to first contact physiotherapy, or, for conditions that require a significant amount of medical management such as gout.

The toolkit requires further testing in a real-world implementation project. It is therefore important that future research explores the transferability and generalisability of the toolkit in primary care. This could be achieved by using qualitative methods including interviews and observations to evaluate which elements are unique to OA and which may be applied more widely.

10.5.2 Implications for research

The focus of this section is on two important issues raised by this thesis that are worthy of further research. The first issue concerns the role that patients and the public play in KM and how they can be supported in the role. The second issue relates to the evaluation of the KM toolkit.

What is the role of patients and the public in KM and implementation, and how can they best be supported?

This thesis has identified a disparity relating to the perceived importance and the evidence of impact of the role of PPIE in KM and implementation. Whilst the importance of PPIE in KM was illustrated, more evidence regarding the role and impact of their involvement is required. A critique of the work by Lau et al, (2016), presented in Chapter 3, was the exclusion of patient studies from the systematic review (due to the focus of the work being on professional behaviour change). As such, the wider influence that patients and the public have on KM and implementation was not described. Therefore, two questions for further research are:

- 1) How do patients influence KM and what are the barriers and facilitators to user involvement?
- 2) How can PPIE in KM best be supported?

In order to answer the first question, a systematic review of the current literature is required, which could be supplemented with evidence from case studies. Related to the issue of barriers and facilitators to patient involvement in KM, is the further question about whether patients and the public are key decision makers in the KM process and the extent to which their involvement is led by managerial discretion or agendas. Considering these issues theoretically, the collective action, or the ways in which people work together to influence change in social settings, is important and patients and the public may play a role in this.

To address the second research question, there is a need to understand what characteristics or skills are needed, in order to identify the infrastructure and training required. This could be undertaken using survey methods as part of a scoping exercise to identify the range of settings in which patients and the public may act as knowledge mobilisers, such as PPGs, academic institutions and third sector organisations. A qualitative study could examine the characteristics and skill sets of individuals within these different settings and the support and training for KM delivered.

In addition, future research is needed to better understand if existing publications relating to PPIE, such as the NIHR National Standards and the GRIPP2 checklist, are applicable to KM and implementation or if separate standards are required.

Can the KM toolkit be used to optimise the implementation of best evidence for other musculoskeletal conditions in primary care?

This thesis has used empirical and theoretical evidence to develop a toolkit comprising recommendations in six key areas for optimising KM for OA in

primary care. Future research could explore the next step by evaluating the use of the KM toolkit in a real-time implementation project.

The candidate has secured an NIHR School for Primary Care Research (SPCR) fellowship to conduct further research to address this. The aim of the work is to evaluate the use of the toolkit in the implementation of evidence from the NIHR themed review 'Moving Forward' for musculoskeletal therapies³⁰ across Staffordshire. A single setting case study (including individual interviews and observations of meetings) will be conducted to explore the process and experiences of using the toolkit in the implementation of Moving Forward evidence for musculoskeletal conditions. The qualitative case study evidence will be mapped against the domains of the KM toolkit to identify how it was used in a real-world implementation project. Stakeholder engagement will be embedded in this research and will help to refine the KM toolkit in light of the findings. This will provide understanding of how to practically develop the tools (or recommendations) in the toolkit to use more widely from an evaluated and refined KM toolkit.

One consideration for future studies is the use of realist methodology to provide an appropriate, robust approach towards examining the diversity and complexity of KM and the implementation of research innovations in practice. A realist evaluation (a theory-driven methodological approach, used to evaluate social programmes) can evaluate and provide evidence for the adoption of evidence-informed models of care whilst understanding the interaction between contextual elements and mechanisms that influence the

³⁰ Available at <https://www.dc.nihr.ac.uk/themed-reviews/research-into-physiotherapy-for-musculoskeletal-conditions.html>

outcomes of interventions (Pawson and Tilley, 1997). Furthermore, the approach may identify how a particular research innovation is implemented and works in clinical practice, for whom, under what circumstances, how and with what resource implications (Pawson and Tilley, 1997). A strength of this approach for future work is that a realist evaluation can account for variation in contexts whereby the results could provide valuable insights to outcome-based commissioning processes and assist in implementation decision making by offering causal explanations.

10.6 Conclusion

This thesis adopted a KM perspective and set out to explore what happens when implementing evidence-based innovations for OA in primary care and to develop a toolkit to optimise the process. The findings have provided increased understanding of the facilitation domain of the i-PARIHS framework by demonstrating the nature and impact of facilitation in optimising KM. The significance of knowledge mobilisers understanding the context of primary care to appeal to a range of stakeholder priorities and circumnavigate potential barriers to implementation has been shown. The KM toolkit reflects the lessons learnt from the MOSAICS to JIGSAW journey and can be used to guide and support stakeholders involved in KM and implementation. Further work is needed to better understand the skills and characteristics of the range of knowledge mobilisers, including patients and the public, from academic, community, and practice settings. A shift in thinking relating to traditional research culture is required to enable a whole system, integrated approach to KM that benefits end users in a timely manner.

References

- AGARWAL, R., GAO, G., DESROCHES, C. & JHA, A. K. 2010. Research commentary—The digital transformation of healthcare: Current status and the road ahead. *Information Systems Research*, 21, 796-809.
- AJZEN, I. 2011. The theory of planned behaviour: reactions and reflections. Taylor & Francis.
- ALAVI, M. & LEIDNER, D. E. 2001. Knowledge management and knowledge management systems: Conceptual foundations and research issues. *MIS quarterly*, 107-136.
- ALLEN, K., BIERMA-ZEINSTRAS, S., FOSTER, N., GOLIGHTLY, Y. & HAWKER, G. 2015. OARSI Clinical Trials Recommendations: Design and conduct of implementation trials of interventions for osteoarthritis. *Osteoarthritis and Cartilage*, 23, 826-838.
- ALLEN, K. D., CHOONG, P. F., DAVIS, A. M., DOWSEY, M. M., DZIEDZIC, K. S., EMERY, C., HUNTER, D. J., LOSINA, E., PAGE, A. E. & ROOS, E. M. 2016. Osteoarthritis: models for appropriate care across the disease continuum. *Best Practice and Research Clinical Rheumatology*, 30, 503-535.
- ANDREW, N., TOLSON, D. & FERGUSON, D. 2008. Building on Wenger: Communities of practice in nursing. *Nurse Education Today*, 28, 246-252.
- ARMSTRONG, N., HERBERT, G., AVELING, E. L., DIXON-WOODS, M. & MARTIN, G. 2013. Optimizing patient involvement in quality improvement. *Health Expectations*, 16, e36-e47.
- ARMSTRONG, N., HERBERT, G. & BREWSTER, L. 2016. Contextual barriers to implementation in primary care: an ethnographic study of a programme to improve chronic kidney disease care. *Family Practice*, 33, 426-431.
- ARUK. 2013. Osteoarthritis in General Practice. [Accessed 13th May 2014].
- BABIKER, A., EL HUSSEINI, M., AL NEMRI, A., AL FRAYH, A., AL JURYAN, N., FAKI, M. O., ASSIRI, A., AL SAADI, M., SHAIKH, F. & AL ZAMIL, F. 2014. Health care professional development: Working as a team to improve patient care. *Sudanese journal of paediatrics*, 14, 9.
- BAIRD, B., CHARLES, A., HONEYMAN, M., MAGUIRE, D. & DAS, P. 2016. *Understanding pressures in general practice*, King's Fund London.
- BAIRD, B., REEVE, H. & ROSS, S. 2018. Innovative models of general practice. The King's Fund.

- BARAC, R., STEIN, S., BRUCE, B. & BARWICK, M. 2014. Scoping review of toolkits as a knowledge translation strategy in health. *BMC medical informatics and decision making*, 14, 121.
- BARNETT-PAGE, E. & THOMAS, J. 2009. Methods for the synthesis of qualitative research: a critical review. *BMC medical research methodology*, 9, 1.
- BAUER, M. S., DAMSCHRODER, L., HAGEDORN, H., SMITH, J. & KILBOURNE, A. M. 2015. An introduction to implementation science for the non-specialist. *BMC psychology*, 3, 32.
- BAUER, M. S., KRAWCZYK, L., TUOZZO, K., FRIGAND, C., HOLMES, S., MILLER, C. J., ABEL, E., OSSER, D. N., FRANZ, A. & BRANDT, C. 2018. Implementing and sustaining team-based telecare for bipolar disorder: lessons learned from a model-guided, mixed methods analysis. *Telemedicine and e-Health*, 24, 45-53.
- BEGG, C., CHO, M., EASTWOOD, S., HORTON, R., MOHER, D., OLKIN, I., PITKIN, R., RENNIE, D., SCHULZ, K. F. & SIMEL, D. 1996. Improving the quality of reporting of randomized controlled trials: the CONSORT statement. *Jama*, 276, 637-639.
- BERTA, W., TEARE, G. F., GILBART, E., GINSBURG, L. S., LEMIEUX-CHARLES, L., DAVIS, D. & RAPPOLT, S. 2010. Spanning the know-do gap: understanding knowledge application and capacity in long-term care homes. *Social Science & Medicine*, 70, 1326-1334.
- BEST, A. & HOLMES, B. 2010. Systems thinking, knowledge and action: towards better models and methods. *Evidence & Policy: A Journal of Research, Debate and Practice*, 6, 145-159.
- BMA. 2015. *Quality First: Managing workload to deliver safe patient care* [Online]. London: British Medical Association. Available: <https://www.bma.org.uk/advice/employment/gp-practices/quality-first> [Accessed 11th February 2017].
- BMA. 2017. *Physician Associates in the UK* [Online]. British Medical Association. Available: <https://www.bma.org.uk/collective-voice/policy-and-research/education-training-and-workforce/physician-associates-in-the-uk> [Accessed 20th May 2019].
- BOAZ, A., HANNEY, S., BORST, R., O'SHEA, A. & KOK, M. 2018. How to engage stakeholders in research: design principles to support improvement. *Health Research Policy and Systems*, 16, 60.
- BORNBAUM, C. C., KORNAS, K., PEIRSON, L. & ROSELLA, L. C. 2015. Exploring the function and effectiveness of knowledge brokers as facilitators of knowledge translation in health-related settings: a systematic review and thematic analysis. *Implementation Science*, 10, 162.

- BORRILL, C., WEST, M., SHAPIRO, D. & REES, A. 2000. Team working and effectiveness in health care. *British Journal of Healthcare Management*, 6, 364-371.
- BOSWORTH, H. B., ALMIRALL, D., WEINER, B. J., MACIEJEWSKI, M., KAUFMAN, M. A., POWERS, B. J., ODDONE, E. Z., LEE, S.-Y. D., DAMUSH, T. M. & SMITH, V. 2010. The implementation of a translational study involving a primary care based behavioral program to improve blood pressure control: the HTN-IMPROVE study protocol (01295). *Implementation Science*, 5, 54.
- BOWLING, A. 2009. *Research Methods in Health. Investigating Health and Health Services*, McGraw-Hill.
- BRAND, C. & COX, S. 2006. Systems for implementing best practice for a chronic disease: management of osteoarthritis of the hip and knee. *Internal Medicine Journal*, 36, 170-179.
- BRAUN, V. & CLARKE, V. 2006. Using thematic analysis in psychology. *Qualitative research in psychology*, 3, 77-101.
- BRAUN, V., CLARKE, V. & TERRY, G. 2014. Thematic analysis. *Qual Res Clin Health Psychol*, 24, 95-114.
- BRITTEN, N. 1995. Qualitative research: qualitative interviews in medical research. *British Medical Journal*, 311, 251-253.
- BROADBENT, J., MAISEY, S., HOLLAND, R. & STEEL, N. 2008. Recorded quality of primary care for osteoarthritis: an observational study. *The British Journal of General Practice* 58, 839-43.
- BROWN, C. H., CURRAN, G., PALINKAS, L. A., AARONS, G. A., WELLS, K. B., JONES, L., COLLINS, L. M., DUAN, N., MITTMAN, B. S. & WALLACE, A. 2017. An overview of research and evaluation designs for dissemination and implementation. *Annual review of public health*, 38, 1-22.
- BRYMAN, A. 2008. *Social Research Methods*, Oxford, Oxford University Press.
- BULLOCK, A., BARNES, E., MORRIS, Z. S., FAIRBANK, J., DE PURY, J., HOWELL, R. & DENMAN, S. 2016. Getting the most out of knowledge and innovation transfer agents in health care: a qualitative study. In: NIHR (ed.). NIHR Journals Library Health Services and Delivery Research.
- CAMERON, A., BRANGAN, E., GABBAY, J., KLEIN, J. H., POPE, C. & WYE, L. 2018. Discourses of joint commissioning. *Health & social care in the community*, 26, 65-71.
- CARLSEN, B., GLENTON, C. & POPE, C. 2007. Thou shalt versus thou shalt not: a meta-synthesis of GPs' attitudes to clinical practice guidelines. *British Journal of General Practice*, 57, 971-978.

- CASP 2006. 10 questions to help you make sense of qualitative research. *In: UNIT, P. H. R. (ed.)*. England.
- CASTIGLIONE, S. & RITCHIE, J. 2012. *Moving into action: we know what practices we want to change, now what* [Online]. CIHR. Available: <http://www.cihr-irsc.gc.ca/e/193.html> [Accessed 4th January 2019].
- CHAN, A.-W., TETZLAFF, J. M., ALTMAN, D. G., LAUPACIS, A., GØTZSCHE, P. C., KRLEŽA-JERIĆ, K., HRÓBJARTSSON, A., MANN, H., DICKERSIN, K. & BERLIN, J. A. 2013. SPIRIT 2013 statement: defining standard protocol items for clinical trials. *Annals of internal medicine*, 158, 200-207.
- CHANDLER, L. & FRY, A. 2009. Can communities of practice make a meaningful contribution to sustainable service improvement in health and social care? *Journal of integrated care*, 17, 41-48.
- CHERAGHI-SOHI, S., MORDEN, A., BOWER, P., KENNEDY, A., ROGERS, A., RICHARDSON, J., SANDERS, T., STEVENSON, F. & ONG, B. N. 2013. Exploring patient priorities among long-term conditions in multimorbidity: A qualitative secondary analysis. *SAGE open medicine*, 1, 2050312113503955.
- CHESLUK, B. J. & HOLMBOE, E. S. 2010. How teams work—or don't—in primary care: a field study on internal medicine practices. *Health Affairs*, 29, 874-879.
- CHEW, S., ARMSTRONG, N. & MARTIN, G. 2013. Institutionalising knowledge brokering as a sustainable knowledge translation solution in healthcare: how can it work in practice? *Evidence & Policy: A Journal of Research, Debate and Practice*, 9, 335-351.
- CLARKE, D. J., GODFREY, M., HAWKINS, R., SADLER, E., HARDING, G., FORSTER, A., MCKEVITT, C., DICKERSON, J. & FARRIN, A. 2013. Implementing a training intervention to support caregivers after stroke: a process evaluation examining the initiation and embedding of programme change. *Implementation Science*, 8, 96.
- COHEN, W. M. & LEVINTHAL, D. A. 1990. Absorptive capacity: A new perspective on learning and innovation. *Administrative science quarterly*, 128-152.
- COLLINS, B. 2018. Adoption and spread of innovation in the NHS. *The King's Fund website*. Available at: www.kingsfund.org.uk/publications/innovation-nhs.
- COMMISSION, P. C. W. 2015. The future of primary care: creating teams for tomorrow. *Health Education England*.
- CONCANNON, T. W., FUSTER, M., SAUNDERS, T., PATEL, K., WONG, J. B., LESLIE, L. K. & LAU, J. 2014. A systematic review of stakeholder engagement in comparative effectiveness and patient-centered

- outcomes research. *Journal of general internal medicine*, 29, 1692-1701.
- CONCANNON, T. W., MEISSNER, P., GRUNBAUM, J. A., MCELWEE, N., GUISE, J.-M., SANTA, J., CONWAY, P. H., DAUDELIN, D., MORRATO, E. H. & LESLIE, L. K. 2012. A new taxonomy for stakeholder engagement in patient-centered outcomes research. *Journal of general internal medicine*, 27, 985-991.
- CONTANDRIOPOULOS, D., LEMIRE, M., DENIS, J. L. & TREMBLAY, É. 2010. Knowledge exchange processes in organizations and policy arenas: a narrative systematic review of the literature. *Milbank Quarterly*, 88, 444-483.
- COOKSEY, D. 2006. *A review of UK health research funding*, The Stationery Office.
- CORBIN, J. & STRAUSS, A. 2014. *Basics of qualitative research: Techniques and procedures for developing grounded theory*, Sage publications.
- COYNE, I. T. 1997. Sampling in qualitative research. Purposeful and theoretical sampling; merging or clear boundaries? *Journal of advanced nursing*, 26, 623-630.
- CRAIG, P., DIEPPE, P., MACINTYRE, S., MICHIE, S., NAZARETH, I. & PETTICREW, M. 2008. Developing and evaluating complex interventions: the new Medical Research Council guidance. *British Medical Journal*, 337.
- CRESWELL, J. W. 2009. *Research Design Qualitative, Quantitative and Mixed Methods Approaches*, SAGE Publications.
- CRESWELL, J. W. & PLANO CLARK, V. L. 2007. *Designing and conducting mixed methods research*, Wiley Online Library.
- CRILLY, T., JASHAPARA, A. & FERLIE, E. 2010. Research utilisation and knowledge mobilisation: a scoping review of the literature. *National Institute for Health Research Service Delivery and Organisation programme*.
- CRILLY, T., JASHAPARA, A., TRENHOLM, S., PECKHAM, A., CURRIE, G. & FERLIE, E. 2013. Knowledge mobilisation in healthcare organisations: synthesising evidence and theory using perspectives of organisational form, resource based view of the firm and critical theory. *NIHR Health Services and Delivery Research programme*.
- CROFT, C., CURRIE, G. & STANISZEWSKA, S. 2016. Moving from rational to normative ideologies of control over public involvement: A case of continued managerial dominance. *Social Science & Medicine*, 162, 124-132.
- CUPERUS, N., SMINK, A. J., BIERMA-ZEINSTRA, S. M., DEKKER, J., SCHERS, H. J., DE BOER, F., VAN DEN ENDE, C. H. & VLIELAND, T. P. V. 2013.

Patient reported barriers and facilitators to using a self-management booklet for hip and knee osteoarthritis in primary care: results of a qualitative interview study. *BMC family practice*, 14, 181.

- CURRIE, G., CROFT, C., CHEN, Y., KIEFER, T., STANISZEWSKA, S. & LILFORD, R. 2018. The capacity of health service commissioners to use evidence: a case study. *In: RESEARCH, H. S. A. D. (ed.)*.
- CURRIE, G., FINN, R. & MARTIN, G. 2007. Spanning boundaries in pursuit of effective knowledge sharing within networks in the NHS. *Journal of health organization and management*, 21, 406-417.
- DAVIDOFF, F., BATALDEN, P., STEVENS, D., OGRINC, G. & MOONEY, S. 2008. Publication guidelines for quality improvement in health care: evolution of the SQUIRE project. *BMJ Quality & Safety*, 17, i3-i9.
- DAVIDOFF, F., DIXON-WOODS, M., LEVITON, L. & MICHIE, S. 2015. Demystifying theory and its use in improvement. *BMJ Quality & Safety*, 24, 228-238.
- DAVIES, H., POWELL, A. & NUTLEY, S. 2016. Mobilizing knowledge in health care. *The Oxford Handbook of Health Care Management*, 279.
- DAVIES, H. T., POWELL, A. E. & NUTLEY, S. M. 2015. Mobilising knowledge to improve UK health care: learning from other countries and other sectors—a multimethod mapping study. *Health Services and Delivery Research*, 3.
- DAVIES, S. 2012. Annual Report of the Chief Medical Officer, Volume One, 2011, On the State of the Public's Health. *London: Department of Health*, 11.
- DENSCOMBE, M. 2008. Communities of practice: A research paradigm for the mixed methods approach. *Journal of mixed methods research*, 2, 270-283.
- DEVERKA, P. A., LAVALLEE, D. C., DESAI, P. J., ESMAIL, L. C., RAMSEY, S. D., VEENSTRA, D. L. & TUNIS, S. R. 2012. Stakeholder participation in comparative effectiveness research: defining a framework for effective engagement. *Journal of comparative effectiveness research*, Mar 1 181-194.
- DICENSO, A., BRYANT-LUKOSIUS, D., MARTIN-MISENER, R., DONALD, F., ABELSON, J., BOURGEAULT, I., KILPATRICK, K., CARTER, N., KAASALAINEN, S. & HARBMAN, P. 2010. Factors enabling advanced practice nursing role integration in Canada. *Nursing leadership (Toronto, Ont.)*, 23, 211-238.
- DIXON-WOODS, M., AGARWAL, S., JONES, D., YOUNG, B. & SUTTON, A. 2005. Synthesising qualitative and quantitative evidence: a review of possible methods. *Journal of health services research & policy*, 10, 45-53B.

- DIXON-WOODS, M. & FITZPATRICK, R. 2001. Qualitative research in systematic reviews: has established a place for itself. *British Medical Journal*, 323, 765.
- DIXON-WOODS, M., MCNICOL, S. & MARTIN, G. 2012. Ten challenges in improving quality in healthcare: lessons from the Health Foundation's programme evaluations and relevant literature. *BMJ Qual Saf*, 21, 876-884.
- DIXON-WOODS, M., SHAW, R. L., AGARWAL, S. & SMITH, J. A. 2004. The problem of appraising qualitative research. *BMJ Quality & Safety*, 13, 223-225.
- DOBBINS, M., HANNA, S. E., CILISKA, D., MANSKE, S., CAMERON, R., MERCER, S. L., O'MARA, L., DECORBY, K. & ROBESON, P. 2009. A randomized controlled trial evaluating the impact of knowledge translation and exchange strategies. *Implementation science*, 4, 61.
- DOBROW, M. J., GOEL, V., LEMIEUX-CHARLES, L. & BLACK, N. A. 2006. The impact of context on evidence utilization: a framework for expert groups developing health policy recommendations. *Social science & medicine*, 63, 1811-1824.
- DOH 2011. Department of Health, innovation, health and wealth: accelerating adoption and diffusion in the NHS *In: DEPARTMENT OF HEALTH, I., HEALTH AND WEALTH (ed.)*.
- DOPSON, S. B., C. FITZGERALD, L. FERLIE, E. FISCHER, M. LEDGER, J. MCCULLOCH, J. MCGIVERN, G. 2013. Health care managers' access and use of management research. Final report. *In: PROGRAMME, N. S. D. A. O. (ed.)*. Southampton.
- DZIEDZIC, K., HEALEY, E., PORCHERET, M., AFOLABI, E., LEWIS, M., MORDEN, A., JINKS, C., MCHUGH, G., RYAN, S. & FINNEY, A. 2017. Implementing core nice guidelines for osteoarthritis in primary care with a model consultation (MOSAICS): A cluster randomised controlled trial. *Osteoarthritis and Cartilage*.
- DZIEDZIC, K. S., HEALEY, E. L., PORCHERET, M., AFOLABI, E. K., LEWIS, M., MORDEN, A., JINKS, C., MCHUGH, G. A., RYAN, S., FINNEY, A., MAIN, C., EDWARDS, J. J., PASKINS, Z., PUSHPA-RAJAH, A. & HAY, E. M. 2018. Implementing core NICE guidelines for osteoarthritis in primary care with a model consultation (MOSAICS): a cluster randomised controlled trial. *Osteoarthritis & Cartilage*, 26, 43-53.
- DZIEDZIC, K. S., HEALEY, E. L., PORCHERET, M., ONG, B. N., MAIN, C. J., JORDAN, K. P., LEWIS, M., EDWARDS, J. J., JINKS, C. & MORDEN, A. 2014a. Implementing the NICE osteoarthritis guidelines: a mixed methods study and cluster randomised trial of a model osteoarthritis consultation in primary care-the Management of OsteoArthritis In Consultations (MOSAICS) study protocol. *Implementation Science*, 9, 1.

- DZIEDZIC, K. S., HEALEY, E. L., PORCHERET, M., ONG, B. N., MAIN, C. J., JORDAN, K. P., LEWIS, M., EDWARDS, J. J., JINKS, C., MORDEN, A., MCHUGH, G. A., RYAN, S., FINNEY, A., JOWETT, S., OPPONG, R., AFOLABI, E., PUSHPA-RAJAH, A., HANDY, J., CLARKSON, K., MASON, E., WHITEHURST, T., HUGHES, R. W., CROFT, P. R. & HAY, E. M. 2014b. Implementing the NICE osteoarthritis guidelines: a mixed methods study and cluster randomised trial of a model osteoarthritis consultation in primary care--the Management of OsteoArthritis In Consultations (MOSAICS) study protocol. *Implementation science : IS*, 9, 95.
- ECCLES, M. P., ARMSTRONG, D., BAKER, R., CLEARY, K., DAVIES, H., DAVIES, S., GLASZIOU, P., ILOTT, I., KINMONTH, A.-L. & LENG, G. 2009. An implementation research agenda. *Implementation Science*, 4, 18.
- ECCLES, M. P. & MITTMAN, B. S. 2006. Welcome to implementation science. *Implementation Science*, 1.
- EDWARDS, C., FOX, R., GILLARD, S., GOURLAY, S., GUVEN, P., JACKSON, C., CHAMBERS, M. & DRENNAN, V. 2013. Explaining health managers' information seeking behaviour and use.
- EGERTON, T., DIAMOND, L., BUCHBINDER, R., BENNELL, K. & SLADE, S. 2016. A systematic review and evidence synthesis of qualitative studies to identify primary care clinicians' barriers and enablers to the management of osteoarthritis. *Osteoarthritis and Cartilage*.
- ENGLAND, N. 2016. *General practice forward view* [Online]. Available: <https://www.england.nhs.uk/wp-content/uploads/2016/04/gpfv.pdf> [Accessed 10th January 2017].
- ERZBERGER, C. & PREIN, G. 1997. Triangulation: Validity and empirically-based hypothesis construction. *Quality and Quantity*, 31, 141-154.
- FARMER, T., ROBINSON, K., ELLIOTT, S. J. & EYLES, J. 2006. Developing and implementing a triangulation protocol for qualitative health research. *Qualitative health research*, 16, 377-394.
- FEILZER, M. Y. 2010. Doing mixed methods research pragmatically: Implications for the rediscovery of pragmatism as a research paradigm. *Journal of mixed methods research*, 4, 6-16.
- FEREDAY, J. & MUIR-COCHRANE, E. 2006. Demonstrating rigor using thematic analysis: A hybrid approach of inductive and deductive coding and theme development. *International journal of qualitative methods*, 5, 80-92.
- FERLIE, E., CRILLY, T., JASHAPARA, A. & PECKHAM, A. 2012. Knowledge mobilisation in healthcare: a critical review of health sector and generic management literature. *Social Science & Medicine*, 74, 1297-1304.

- FERLIE, E., FITZGERALD, L., WOOD, M. & HAWKINS, C. 2005. The nonspread of innovations: the mediating role of professionals. *Academy of management journal*, 48, 117-134.
- FERLIE, E., MONTGOMERY, K. & PEDERSEN, A. R. 2016. *The Oxford Handbook of Health Care Management*, Oxford University Press.
- FINCH, T. L., RAPLEY, T., GIRLING, M., MAIR, F. S., MURRAY, E., TREWEEK, S., MCCOLL, E., STEEN, I. N. & MAY, C. R. 2013. Improving the normalization of complex interventions: measure development based on normalization process theory (NoMAD): study protocol. *Implementation Science*, 8, 43.
- FINK, A., KOSECOFF, J., CHASSIN, M. & BROOK, R. H. 1984. Consensus methods: characteristics and guidelines for use. *American journal of public health*, 74, 979-983.
- FINK, A. S. The role of the researcher in the qualitative research process. A potential barrier to archiving qualitative data. Forum Qualitative Sozialforschung/Forum: Qualitative Social Research, 2000.
- FINNEY, A., DZIEDZIC, K. S., LEWIS, M. & HEALEY, E. 2017. Multisite peripheral joint pain: a cross-sectional study of prevalence and impact on general health, quality of life, pain intensity and consultation behaviour. *BMC Musculoskeletal Disorders*, 18, 535.
- FINNEY, A., LAMBOURNE, H. & COTTRELL, E. 2019. Osteoarthritis management in primary care. *Practice Nursing*, 114-118.
- FORSDIKE, K., MURPHY, T. A. & HEGARTY, K. 2018. Supporting primary care nurses to work at an advanced level through changing practices' organisational governance. *Australian journal of primary health*, 24, 171-176.
- FOUNDATION, H. 2015. Communications in healthcare improvement - a toolkit. In: FOUNDATION, T. H. (ed.).
- GABBAY, J. & LE MAY, A. 2004. Evidence based guidelines or collectively constructed "mindlines?" Ethnographic study of knowledge management in primary care. *British Medical Journal*, 329, 1013.
- GABBAY, J., LE MAY, A., JEFFERSON, H., WEBB, D., LOVELOCK, R., POWELL, J. & LATHLEAN, J. 2003. A Case Study of Knowledge Management in Multiagency Consumer-Informed Communities of Practice': Implications for Evidence-Based Policy Development in Health and Social Services. *Health*, 7, 283-310.
- GABBAY, J. & MAY, A. 2011. *Practice-based evidence for healthcare: clinical mindlines*, Abingdon, Oxon, Routledge.
- GALBRAITH, K., WARD, A. & HENEGHAN, C. 2017. A real-world approach to Evidence-Based Medicine in general practice: a competency framework

derived from a systematic review and Delphi process. *BMC medical education*, 17, 78.

- GALLACHER, K., MAY, C., MONTORI, V. & MAIR, F. 2011. Understanding treatment burden in chronic heart failure patients. A qualitative study. *Ann Fam Med*, 9, 235-243.
- GIBBERT, M., RUIGROK, W. & WICKI, B. 2008. What passes as a rigorous case study? *Strategic management journal*, 29, 1465-1474.
- GLASER, B. G. & STRAUSS, A. L. 2009. *The discovery of grounded theory: Strategies for qualitative research*, Transaction publishers.
- GOUGH, D., OLIVER, S. & THOMAS, J. 2017. *An introduction to systematic reviews*, Sage.
- GOUGH, D., THOMAS, J. & OLIVER, S. 2012. Clarifying differences between review designs and methods. *Systematic reviews*, 1, 28.
- GRAHAM, I. D., LOGAN, J., HARRISON, M. B., STRAUS, S. E., TETROE, J. & CASWELL, W. 2006. Lost in knowledge translation: time for a map? *J Contin Educ Health Prof.*, 26.
- GREEN, J. & THOROGOOD, N. 2009. *Qualitative Methods for Health Research - Second Edition*, London, Sage.
- GREEN, L. W. 2008. Making research relevant: if it is an evidence-based practice, where's the practice-based evidence? *Family practice*, 25, i20-i24.
- GREENHALGH, T., HOWICK, J. & MASKREY, N. 2014. Evidence based medicine: a movement in crisis? *British Medical Journal* 348, g3725.
- GREENHALGH, T., JACKSON, C., SHAW, S. & JANAMIAN, T. 2016. Achieving research impact through co-creation in community-based health services: literature review and case study. *The Milbank Quarterly*, 94, 392-429.
- GREENHALGH, T. & TAYLOR, R. 1997. How to read a paper: papers that go beyond numbers (qualitative research). *British Medical Journal* 315, 740-743.
- GRIMSHAW, J. M., ECCLES, M. P., LAVIS, J. N., HILL, S. J. & SQUIRES, J. E. 2012. Knowledge translation of research findings. *Implementation science: IS.*, 7.
- GRIMSHAW, J. M., THOMAS, R. E., MACLENNAN, G., FRASER, C., RAMSAY, C., VALE, L., WHITTY, P., ECCLES, M. P., MATOWE, L., SHIRAN, L., WENSING, M., DIJKSTRA, R. & DONALDSON, C. 2004. Effectiveness and efficiency of guideline dissemination and implementation strategies. *Health Technol Assess*, 8.

- GROL, R. 1997. Beliefs and evidence in changing clinical practice. *British Medical Journal*, 315.
- GROL, R. & GRIMSHAW, J. 2003. From best evidence to best practice: effective implementation of change in patients' care. *Lancet*, 362.
- GROL, R., WENSING, M. & ECCLES, M. P. 2004. *Improving patient care: implementing change in clinical practice*, Oxford, Elsevier.
- GRUMBACH, K. & BODENHEIMER, T. 2004. Can health care teams improve primary care practice? *Jama*, 291, 1246-1251.
- GUBA, E. G. & LINCOLN, Y. S. 1994. Competing paradigms in qualitative research. *Handbook of qualitative research*, 2, 163-194.
- HAGEDORN, H., KENNY, M., GORDON, A. J., ACKLAND, P. E., NOORBALOOCHI, S., YU, W. & HARRIS, A. H. 2018. Advancing pharmacological treatments for opioid use disorder (ADaPT-OD): protocol for testing a novel strategy to improve implementation of medication-assisted treatment for veterans with opioid use disorders in low-performing facilities. *Addiction science & clinical practice*, 13, 25.
- HAM, C. & MURRAY, R. 2015. *Implementing the NHS five year forward view: aligning policies with the plan*, King's Fund London.
- HANNES, K., LOCKWOOD, C. & PEARSON, A. 2010. A comparative analysis of three online appraisal instruments' ability to assess validity in qualitative research. *Qualitative health research*, 20, 1736-1743.
- HARDEN, A., BRUNTON, G., FLETCHER, A. & OAKLEY, A. 2009. Teenage pregnancy and social disadvantage: systematic review integrating controlled trials and qualitative studies. *British Medical Journal* 339, b4254.
- HARDEN, A., BRUNTON, G., FLETCHER, A., OAKLEY, A., BURCHETT, H. & BACKHANS, M. 2006. Young people, pregnancy and social exclusion: A systematic synthesis of research evidence to identify effective, appropriate and promising approaches for prevention and support. In: ONLINE, L. R. (ed.). London: EPPI-Centre, Social Science Research Unit, Institute of Education, University of London.
- HARDEN, A., GARCIA, J., OLIVER, S., REES, R., SHEPHERD, J., BRUNTON, G. & OAKLEY, A. 2004. Applying systematic review methods to studies of people's views: an example from public health research. *Journal of Epidemiology & Community Health*, 58, 794-800.
- HARDEN, A. & THOMAS, J. 2005. Methodological issues in combining diverse study types in systematic reviews. *International Journal of Social Research Methodology*, 8, 257-271.

- HARRIS, M. F. & ZWAR, N. A. 2007. Care of patients with chronic disease: the challenge for general practice. *Medical Journal of Australia*, 187, 104.
- HARVEY, G., JAS, P. & WALSH, K. 2015. Analysing organisational context: case studies on the contribution of absorptive capacity theory to understanding inter-organisational variation in performance improvement. *BMJ Qual Saf*, 24, 48-55.
- HARVEY, G. & KITSON, A. 2016. PARIHS revisited: from heuristic to integrated framework for the successful implementation of knowledge into practice. *Implementation Science*, 11, 1.
- HARVEY, G., SKELCHER, C., SPENCER, E., JAS, P. & WALSH, K. 2010. Absorptive capacity in a non-market environment: a knowledge-based approach to analysing the performance of sector organizations. *Public Management Review*, 12, 77-97.
- HAY, E., DZIEDZIC, K., FOSTER, N., PEAT, G., BARTLAM, B., BLAGOJEVIC-BUCKNALL, M., EDWARDS, J., HEALEY, E., HOLDEN, M. & HUGHES, R. 2018. Optimal primary care management of clinical osteoarthritis and joint pain in older people: a mixed-methods programme of systematic reviews, observational and qualitative studies, and randomised controlled trials. *Programme Grants for Applied Research*, 6, 1-260.
- HELFRICH, C. D., DAMSCHRODER, L. J., HAGEDORN, H. J., DAGGETT, G. S., SAHAY, A., RITCHIE, M., DAMUSH, T., GUIHAN, M., ULLRICH, P. M. & STETLER, C. B. 2010. A critical synthesis of literature on the promoting action on research implementation in health services (PARIHS) framework. *Implement Sci*, 5.
- HEWISON, A., GALE, N. & SHAPIRO, J. 2012. Co-production in research: some reflections on the experience of engaging practitioners in health research. *Public Money & Management*, 32, 297-302.
- HIGGINS, J. P. & GREEN, S. 2008. *Cochrane handbook for systematic reviews of interventions*, England, Wiley Online Library.
- HILL, J. N., GUIHAN, M., HOGAN, T. P., SMITH, B. M., LAVELA, S. L., WEAVER, F. M., ANAYA, H. D. & EVANS, C. T. 2017. Use of the PARIHS framework for retrospective and prospective implementation evaluations. *Worldviews on Evidence-Based Nursing*, 14, 99-107.
- HOARE, K. J., MILLS, J. & FRANCIS, K. 2012. The role of Government policy in supporting nurse-led care in general practice in the United Kingdom, New Zealand and Australia: an adapted realist review. *Journal of advanced Nursing*, 68, 963-980.
- HOCHBERG, M. C. 2007. Quality measures in osteoarthritis. *Clinical and experimental rheumatology*, 25, 102-6.

- HOFFMAN, A., MONTGOMERY, R., AUBRY, W. & TUNIS, S. R. 2010. How best to engage patients, doctors, and other stakeholders in designing comparative effectiveness studies. *Health Affairs*, 29, 1834-1841.
- HOLMES, B. J., BEST, A., DAVIES, H., HUNTER, D., KELLY, M. P., MARSHALL, M. & RYCROFT-MALONE, J. 2017. Mobilising knowledge in complex health systems: a call to action. *Evidence & Policy: A Journal of Research, Debate and Practice*, 13, 539-560.
- HORTON, T., ILLINGWORTH, J. & WARBURTON, W. 2018. The spread challenge. *Health Foundation*.
- HUNTER, D. J., HINMAN, R. S., BOWDEN, J. L., EGERTON, T., BRIGGS, A. M., BUNKER, S. J., KASZA, J., FORBES, A. B., FRENCH, S. D., PIROTTA, M., SCHOFIELD, D. J., ZWAR, N. A., BENNELL, K. L., SHUCK, K., MARSHALL, C., KING, M. & WOOD, A. 2018. Effectiveness of a new model of primary care management on knee pain and function in patients with knee osteoarthritis: Protocol for the PARTNER STUDY. *BMC Musculoskeletal Disorders*, 19 (1) (no pagination).
- HUNTER, D. J., SCHOFIELD, D. & CALLANDER, E. 2014. The individual and socioeconomic impact of osteoarthritis. *Nature Reviews Rheumatology*, 10, 437.
- HURLEY, M., WALSH, N., MITCHELL, H., PIMM, T., PATEL, A., WILLIAMSON, E., JONES, R., DIEPPE, P. & REEVES, B. 2007. Clinical effectiveness of a rehabilitation program integrating exercise, self-management, and active coping strategies for chronic knee pain: A cluster randomized trial. *Arthritis care & research*, 57, 1211-1219.
- IMPROVEMENT, N. 2018. Plan, Do, Study, Act (PDSA) cycles and the model for improvement.
- INVOLVE, N. 2012. Briefing notes for researchers: involving the public in NHS, public health and social care research. *INVOLVE Eastleigh, UK*.
- JANAMIAN, T., CROSSLAND, L. & JACKSON, C. L. 2016. Embracing value co-creation in primary care services research: a framework for success. *The Medical Journal of Australia*, 204, 5.
- JINKS, C., CARTER, P., RHODES, C., BEECH, R., DZIEDZIC, K., HUGHES, R., BLACKBURN, S. & ONG, B. N. 2013. Sustaining patient and public involvement in research: a case study of a research centre. *Journal of care services management*, 7, 146-154.
- JINKS, C., CARTER, P., RHODES, C., TAYLOR, R., BEECH, R., DZIEDZIC, K., BLACKBURN, S., HUGHES, R. & ONG, B. N. 2016. Patient and public involvement in primary care research-an example of ensuring its sustainability. *Research involvement and engagement*, 2, 1.
- JINKS, C., ONG, B. N. & RICHARDSON, J. 2007. A mixed methods study to investigate needs assessment for knee pain and disability: population and individual perspectives. *BMC musculoskeletal disorders*, 8, 59.

- JIWA, M., DEAS, K., ROSS, J., SHAW, T., WILCOX, H. & SPILSBURY, K. 2009. An inclusive approach to raising standards in general practice: working with a 'community of practice' in Western Australia. *BMC medical research methodology*, 9, 13.
- JLA 2018. The James Lind Alliance Guidebook *In: JLA (ed.)*.
- JOHNSON, R. B. & ONWUEGBUZIE, A. J. 2004. Mixed methods research: A research paradigm whose time has come. *Educational researcher*, 33, 14-26.
- JONES, J. & HUNTER, D. 1995. Consensus methods for medical and health services research. *British Medical Journal*, 311, 376.
- JONES, S.-L., PROCTER, R. & YOUNIE, S. 2015. Participatory knowledge mobilisation: an emerging model for international translational research in education. *Journal of Education for Teaching*, 41, 555-573.
- JONSEN, K. & JEHN, K. A. 2009. Using triangulation to validate themes in qualitative studies. *Qualitative Research in Organizations and Management: An International Journal*, 4, 123-150.
- JORDAN, K., ARDEN, N., DOHERTY, M., BANNWARTH, B., BIJLSMA, J., DIEPPE, P., GUNTHER, K., HAUSELMANN, H., HERRERO-BEAUMONT, G. & KAKLAMANIS, P. 2003. EULAR Recommendations 2003: an evidence based approach to the management of knee osteoarthritis: Report of a Task Force of the Standing Committee for International Clinical Studies Including Therapeutic Trials (ESCISIT). *Annals of the rheumatic diseases*, 62, 1145-1155.
- JORDAN, K. P., JÖUD, A., BERGKNUT, C., CROFT, P., EDWARDS, J. J., PEAT, G., PETERSSON, I. F., TURKIEWICZ, A., WILKIE, R. & ENGLUND, M. 2014. International comparisons of the consultation prevalence of musculoskeletal conditions using population-based healthcare data from England and Sweden. *Annals of the rheumatic diseases*, 73, 212-218.
- JORDAN, K. P., KADAM, U. T., HAYWARD, R., PORCHERET, M., YOUNG, C. & CROFT, P. 2010. Annual consultation prevalence of regional musculoskeletal problems in primary care: an observational study. *BMC musculoskeletal disorders*, 11, 144.
- KECK, L. P., H. WEBB, T. 2018. Learning and insights on peer support. *Q Lab Essays* [Online]. Available from: <https://qlabessays.health.org.uk/essay/learning-and-insights-on-peer-support/> [Accessed 9th April 2019].
- KENDALL, E., SUNDERLAND, N., MUENCHBERGER, H. & ARMSTRONG, K. 2009. When guidelines need guidance: considerations and strategies for improving the adoption of chronic disease evidence by general practitioners. *Journal of evaluation in clinical practice*, 15, 1082-1090.

- KENNEDY, A., BOWER, P., REEVES, D., BLAKEMAN, T., BOWEN, R., CHEW-GRAHAM, C., EDEN, M., FULLWOOD, C., GAFFNEY, H. & GARDNER, C. 2013. Implementation of self management support for long term conditions in routine primary care settings: cluster randomised controlled trial. *Bmj*, 346, f2882.
- KENNEDY, A., CHEW-GRAHAM, C., BLAKEMAN, T., BOWEN, A., GARDNER, C., PROTHEROE, J., ROGERS, A. & GASK, L. 2010. Delivering the WISE (Whole Systems Informing Self-Management Engagement) training package in primary care: learning from formative evaluation. *Implementation Science*, 5, 7.
- KENNEDY, A., ROGERS, A., CHEW-GRAHAM, C., BLAKEMAN, T., BOWEN, R., GARDNER, C., LEE, V., MORRIS, R. & PROTHEROE, J. 2014. Implementation of a self-management support approach (WISE) across a health system: a process evaluation explaining what did and did not work for organisations, clinicians and patients. *Implementation Science*, 9, 129.
- KERNO JR, S. J. 2008. Limitations of communities of practice: a consideration of unresolved issues and difficulties in the approach. *Journal of Leadership & Organizational Studies*, 15, 69-78.
- KISLOV, R. 2012. *Multiprofessional Communities of Practice in a Large-Scale Healthcare Knowledge Mobilisation Initiative: A Qualitative Case Study of Boundary, Identity and Knowledge Sharing*. The University of Manchester (United Kingdom).
- KISLOV, R. 2013. From a project team to a community of practice? An exploration of boundary and identity in the context of healthcare collaboration. *Patient-Centred Health Care*. Springer.
- KISLOV, R. 2014. Boundary discontinuity in a constellation of interconnected practices. *Public Administration*, 92, 307-323.
- KISLOV, R., HODGSON, D. & BOADEN, R. 2016. Professionals as knowledge brokers: The limits of authority in healthcare collaboration. *Public Administration*, 94, 472-489.
- KISLOV, R., WALSH, K. & HARVEY, G. 2012. Managing boundaries in primary care service improvement: a developmental approach to communities of practice. *Implementation Science*, 7, 1.
- KISLOV, R., WILSON, P. & BOADEN, R. 2017. The 'dark side' of knowledge brokering. *Journal of health services research & policy*, 22, 107-112.
- KISLOV, R., WILSON, P. M., KNOWLES, S. & BOADEN, R. 2018. Learning from the emergence of NIHR Collaborations for Leadership in Applied Health Research and Care (CLAHRCs): a systematic review of evaluations. *Implementation Science*, 13, 111.

- KITSON, A., HARVEY, G. & MCCORMACK, B. 1998. Enabling the implementation of evidence based practice: a conceptual framework. *Qual Health Care*, 7.
- KITSON, A. L. & HARVEY, G. 2016. Methods to succeed in effective knowledge translation in clinical practice. *Journal of Nursing Scholarship*, 48, 294-302.
- KITSON, A. L., RYCROFT-MALONE, J., HARVEY, G., MCCORMACK, B., SEERS, K. & TITCHEN, A. 2008. Evaluating the successful implementation of evidence into practice using the PARIHS framework: theoretical and practical challenges. *Implementation Sci: IS*, 3.
- KITZINGER, J. 1994. The methodology of focus groups: the importance of interaction between research participants. *Sociology of health & illness*, 16, 103-121.
- KITZINGER, J. 1995. Qualitative research. Introducing focus groups. *BMJ: British medical journal*, 311, 299.
- KLOEK, C., BOSSEN, D., DE BAKKER, D. H., VEENHOF, C. & DEKKER, J. 2017. Blended interventions to change behavior in patients with chronic somatic disorders: systematic review. *Journal of medical Internet research*, 19.
- KLOEK, C., VAN TILBURG, M., STAAL, J., VEENHOF, C. & BOSSEN, D. 2019. Development and proof of concept of a blended physiotherapeutic intervention for patients with non-specific low back pain. *Physiotherapy*.
- KLOEK, C. J., VAN DONGEN, J. M., DE BAKKER, D. H., BOSSEN, D., DEKKER, J. & VEENHOF, C. 2018. Cost-effectiveness of a blended physiotherapy intervention compared to usual physiotherapy in patients with hip and/or knee osteoarthritis: a cluster randomized controlled trial. *BMC public health*, 18, 1082.
- KOMORITA, S. S. 1963. Attitude content, intensity, and the neutral point on a Likert scale. *The Journal of social psychology*, 61, 327-334.
- KOUSSA, N. 2017. Enabling change through communities of practice: Wellbeing Our Way. *National Voices*.
- KREFTING, L. 1991. Rigor in qualitative research: The assessment of trustworthiness. *The American journal of occupational therapy*, 45, 214-222.
- LARME, A. C. & PUGH, J. A. 1998. Attitudes of primary care providers toward diabetes: barriers to guideline implementation. *Diabetes care*, 21, 1391-1396.
- LAU, R., STEVENSON, F., ONG, B. N., DZIEDZIC, K., ELDRIDGE, S., EVERITT, H., KENNEDY, A., KONTOPANTELIS, E., LITTLE, P. & QURESHI, N. 2014. Addressing the evidence to practice gap for complex

- interventions in primary care: a systematic review of reviews protocol. *BMJ open*, 4, e005548.
- LAU, R., STEVENSON, F., ONG, B. N., DZIEDZIC, K., TREWEEK, S., ELDRIDGE, S., EVERITT, H., KENNEDY, A., QURESHI, N. & ROGERS, A. 2016. Achieving change in primary care—causes of the evidence to practice gap: systematic reviews of reviews. *Implementation Science*, 11, 1.
- LAU, R., STEVENSON, F., ONG, B. N., DZIEDZIC, K., TREWEEK, S., ELDRIDGE, S., EVERITT, H., KENNEDY, A., QURESHI, N., ROGERS, A., PEACOCK, R. & MURRAY, E. 2015. Achieving change in primary care—effectiveness of strategies for improving implementation of complex interventions: systematic review of reviews. *BMJ Open*, 5.
- LAVE, J. 1991. Situating learning in communities of practice. *Perspectives on socially shared cognition*, 2, 63-82.
- LAVE, J. & WENGER, E. 1991. *Situated learning: Legitimate peripheral participation*, Cambridge university press.
- LAVIS, J. N. 2006. Research, public policymaking, and knowledge-translation processes: Canadian efforts to build bridges. *J Contin Educ Health Prof*, 26.
- LAVIS, J. N., ROBERTSON, D., WOODSIDE, J. M., MCLEOD, C. B. & ABELSON, J. 2003. How can research organizations more effectively transfer research knowledge to decision makers? *Milbank Q*, 81.
- LAWRENCE, P., SHAW, R., LANE, L. & EISNER, R. 2000. Participatory multiple objective decision making processes: Emerging approaches with new challenges. *Watershed Management and Operations Management 2000*.
- LAWRENCE, R. C., FELSON, D. T., HELMICK, C. G., ARNOLD, L. M., CHOI, H., DEYO, R. A., GABRIEL, S., HIRSCH, R., HOCHBERG, M. C. & HUNDER, G. G. 2008. Estimates of the prevalence of arthritis and other rheumatic conditions in the United States: Part II. *Arthritis & Rheumatism*, 58, 26-35.
- LEASK, M., LEE, C., MILNER, T., NORTON, M. & DIMPLE, R. 2008. Knowledge management tools and techniques: helping you access the right knowledge at the right time. *Improvement and development agency for local government*. Available on the Internet: < [http://www. idea.gov. uk/idk/aio/8595069](http://www.idea.gov.uk/idk/aio/8595069).
- LEATT, P., SHEA, C., STUDER, M. & WANG, V. 2006. IT solutions for patient safety—best practices for successful implementation in healthcare. *Healthc Q*, 9, 94-104.
- LEECH, N. L. & ONWUEGBUZIE, A. J. 2007. An array of qualitative data analysis tools: a call for data analysis triangulation. *School psychology quarterly*, 22, 557.

- LESSARD, L., MICHALOWSKI, W., FUNG-KEE-FUNG, M., JONES, L. & GRUDNIEWICZ, A. 2017. Architectural frameworks: defining the structures for implementing learning health systems. *Implementation Science*, 12, 78.
- LESSER, E. L. & STORCK, J. 2001. Communities of practice and organizational performance. *IBM systems journal*, 40, 831-841.
- LEVESQUE, P., DAVIDSON, S. & KIDDER, K. 2007. Knowledge exchange for Attention Deficit Hyperactivity Disorder research: An integrated evidence and knowledge exchange framework leading to more effective research dissemination practices. *Journal of the Canadian Academy of Child and Adolescent Psychiatry*, 16, 51.
- LEVIN, B. 2008. *Thinking about knowledge mobilization: A discussion paper prepared at the request of the canadian council on learning and the social sciences and humanities research council*, Canadian Council on Learning.
- LEVIN, B. 2011. Mobilising research knowledge in education. *London Review of Education*, 9, 15-26.
- LINCOLN, Y. S. & GUBA, E. G. 1986. But is it rigorous? Trustworthiness and authenticity in naturalistic evaluation. *New directions for program evaluation*, 1986, 73-84.
- LINEKER, S. C., BELL, M. J. & BADLEY, E. M. 2011. Evaluation of an inter-professional educational intervention to improve the use of arthritis best practices in primary care. *The Journal of rheumatology*, 38, 931-7.
- LINEKER, S. C., BELL, M. J., BOYLE, J., BADLEY, E. M., FLAKSTAD, L., FLEMING, J., LYDDIATT, A., MACDONALD, J., MCCARTHY, J. & ZUMMER, M. 2009. Implementing arthritis clinical practice guidelines in primary care. *Medical teacher*, 31, 230-237.
- LINEKER, S. C. & HUSTED, J. A. 2010. Educational Interventions for Implementation of Arthritis Clinical Practice Guidelines in Primary Care: Effects on Health Professional Behavior. *Journal of Rheumatology*, 37, 1562-1569.
- LIPSCOMB, M. 2012. Abductive reasoning and qualitative research. *Nursing Philosophy*, 13, 244-256.
- LOCKETT, A., EL ENANY, N., CURRIE, G., OBORN, E., BARRETT, M., RACKO, G., BISHOP, S. & WARING, J. 2014. A formative evaluation of Collaboration for Leadership in Applied Health Research and Care (CLAHRC): institutional entrepreneurship for service innovation.
- LOMAS, J. 2000. Using 'linkage and exchange' to move research into policy at a Canadian foundation. *Health affairs*, 19, 236.

- LOMAS, J. 2007. The in-between world of knowledge brokering. *British Medical Journal*, 334.
- MACWALTER, G., MCKAY, J. & BOWIE, P. 2016. Utilisation of internet resources for continuing professional development: a cross-sectional survey of general practitioners in Scotland. *BMC medical education*, 16, 24.
- MARSHALL, L. R. & EDGLEY, A. 2015. Perils and pitfalls for clinicians embarking on qualitative research in physiotherapy. *Nurse researcher*, 22, 30-34.
- MARSHALL, M. 2014. Researchers-in-Residence: a solution to the challenge of evidence-informed improvement? *Primary health care research & development*, 15, 337-338.
- MARSHALL, M., DE SILVA, D., CRUICKSHANK, L., SHAND, J., WEI, L. & ANDERSON, J. 2017. What we know about designing an effective improvement intervention (but too often fail to put into practice). *BMJ Qual Saf*, 26, 578-582.
- MARTIN, S. 2010. Co-production of social research: strategies for engaged scholarship. *Public Money & Management*, 30, 211-218.
- MASOOD, M., THALIATH, E. T., BOWER, E. J. & NEWTON, J. T. 2011. An appraisal of the quality of published qualitative dental research. *Community dentistry and oral epidemiology*, 39, 193-203.
- MAY, C. 2013. Towards a general theory of implementation. *Implementation Science*, 8, 1-14.
- MAY, C., ALLISON, G., CHAPPLE, A., CHEW-GRAHAM, C., DIXON, C., GASK, L., GRAHAM, R., ROGERS, A. & ROLAND, M. 2004. Framing the doctor-patient relationship in chronic illness: a comparative study of general practitioners' accounts. *Sociology of health & illness*, 26, 135-158.
- MAY, C. & FINCH, T. 2009. Implementation, embedding, and integration: an outline of Normalization Process Theory. *Sociology*, 43.
- MAY, C., FINCH, T., MAIR, F., BALLINI, L., DOWRICK, C., ECCLES, M., GASK, L., MACFARLANE, A., MURRAY, E. & RAPLEY, T. 2007. Understanding the implementation of complex interventions in health care: the normalization process model. *BMC Health Serv Res*, 7.
- MAY, C., MAIR, F. S., FINCH, T., MACFARLANE, A., DOWRICK, C., TREWEEK, S., RAPLEY, T., BALLINI, L., ONG, B. N. & ROGERS, A. 2009. Development of a theory of implementation and integration: Normalization Process Theory. *Implement Sci*, 4.
- MAY, C., RAPLEY, T., MAIR, F. S., TREWEEK, S., MURRAY, E., BALLINI, L., MACFARLANE, A., GIRLING, M. & FINCH, T. L. 2015. *Normalization Process Theory On-line Users' Manual, Toolkit and NoMAD instrument*

[Online]. Available: <http://www.normalizationprocess.org> [Accessed 19th February 2019].

- MAYS, N. & POPE, C. 2000a. Assessing quality in qualitative research. *Bmj*, 320, 50-52.
- MAYS, N. & POPE, C. 2000b. Qualitative research in health care: Assessing quality in qualitative research. *BMJ: British Medical Journal*, 320, 50.
- MCALINDON, T. E., BANNURU, R. R., SULLIVAN, M., ARDEN, N., BERENBAUM, F., BIERMA-ZEINSTRAS, S., HAWKER, G., HENROTIN, Y., HUNTER, D. & KAWAGUCHI, H. 2014. OARSI guidelines for the non-surgical management of knee osteoarthritis. *Osteoarthritis and cartilage*, 22, 363-388.
- MCCOLL, A., SMITH, H., WHITE, P. & FIELD, J. 1998. General practitioners' perceptions of the route to evidence based medicine: a questionnaire survey. *Bmj*, 316, 361-365.
- MCEVOY, R., BALLINI, L., MALTONI, S., O'DONNELL, C. A., MAIR, F. S. & MACFARLANE, A. 2014. A qualitative systematic review of studies using the normalization process theory to research implementation processes. *Implementation Science*, 9, 2.
- MCINERNEY, C. 2002. Knowledge management and the dynamic nature of knowledge. *Journal of the American society for Information Science and Technology*, 53, 1009-1018.
- MCINNES, S., PETERS, K., BONNEY, A. & HALCOMB, E. 2015. An integrative review of facilitators and barriers influencing collaboration and teamwork between general practitioners and nurses working in general practice. *Journal of advanced nursing*, 71, 1973-1985.
- MCINNES, S., PETERS, K., BONNEY, A. & HALCOMB, E. 2017. Understanding collaboration in general practice: a qualitative study. *Family Practice*, 34, 621-626.
- MEIJER, P. C., VERLOOP, N. & BEIJAARD, D. 2002. Multi-method triangulation in a qualitative study on teachers' practical knowledge: An attempt to increase internal validity. *Quality and quantity*, 36, 145-167.
- MENEAR, M., GRINDROD, K., CLOUSTON, K., NORTON, P. & LÉGARÉ, F. 2012. Advancing knowledge translation in primary care. *Canadian Family Physician*, 58, 623-627.
- MEYRICK, J. 2006. What is good qualitative research? A first step towards a comprehensive approach to judging rigour/quality. *Journal of health psychology*, 11, 799-808.
- MICHIE, S., JOHNSTON, M., ABRAHAM, C., LAWTON, R., PARKER, D. & WALKER, A. 2005. Making psychological theory useful for implementing evidence based practice: a consensus approach. *Qual Saf Health Care*, 14.

- MICHIE, S., JOHNSTON, M., FRANCIS, J., HARDEMAN, W. & ECCLES, M. 2008. From theory to intervention: mapping theoretically derived behavioural determinants to behaviour change techniques. *Applied psychology*, 57, 660-680.
- MICHIE, S., VAN STRALEN, M. M. & WEST, R. 2011. The behaviour change wheel: a new method for characterising and designing behaviour change interventions. *Implementation science*, 6, 42.
- MILES, M. B. & HUBERMAN, A. M. 1994. *Qualitative data analysis: An expanded sourcebook*, sage.
- MITTON, C., ADAIR, C. E., MCKENZIE, E., PATTEN, S. B. & PERRY, B. W. 2007. Knowledge transfer and exchange: review and synthesis of the literature. *The Milbank Quarterly*, 85, 729-768.
- MOFFATT, F., GOODWIN, R. & HENDRICK, P. 2017. Physiotherapy-as-first-point-of-contact-service for patients with musculoskeletal complaints: understanding the challenges of implementation. *Primary health care research & development*, 1-10.
- MOHER, D., LIBERATI, A., TETZLAFF, J. & ALTMAN, D. G. 2009. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *Annals of internal medicine*, 151, 264-269.
- MOORE, G., AUDREY, S., BARKER, M., BOND, L., BONELL, C., COOPER, C., HARDEMAN, W., MOORE, L., O'CATHAIN, A. & TINATI, T. 2014. Process evaluation in complex public health intervention studies: the need for guidance. BMJ Publishing Group Ltd.
- MORDEN, A., BROOKS, L., JINKS, C., PORCHERET, M., ONG, B. N. & DZIEDZIC, K. 2015. Research "push", long term-change, and general practice. *Journal of health organization and management*, 29, 798-821.
- MORDEN, A., JINKS, C., ONG, B. N., PORCHERET, M. & DZIEDZIC, K. S. 2014. Acceptability of a 'guidebook' for the management of Osteoarthritis: a qualitative study of patient and clinician's perspectives. *BMC musculoskeletal disorders*, 15, 1.
- MORGAN, D. L. 1988. *Focus groups as qualitative research*, Sage Publications, Inc.
- MORRIS, Z. S., WOODING, S. & GRANT, J. 2011. The answer is 17 years, what is the question: understanding time lags in translational research. *Journal of the Royal Society of Medicine*, 104, 510-520.
- MORSE, J. M., BARRETT, M., MAYAN, M., OLSON, K. & SPIERS, J. 2002. Verification strategies for establishing reliability and validity in qualitative research. *International journal of qualitative methods*, 1, 13-22.

- MORTON, K. L., ATKIN, A. J., CORDER, K., SUHRCKE, M., TURNER, D. & VAN SLUIJS, E. M. F. 2017. Engaging stakeholders and target groups in prioritising a public health intervention: the Creating Active School Environments (CASE) online Delphi study. *BMJ Open*, 7.
- MUDGE, A. M., BANKS, M. D., BARNETT, A. G., BLACKBERRY, I., GRAVES, N., GREEN, T., HARVEY, G., HUBBARD, R. E., INOUE, S. K. & KURRLE, S. 2017. CHERISH (collaboration for hospitalised elders reducing the impact of stays in hospital): protocol for a multi-site improvement program to reduce geriatric syndromes in older inpatients. *BMC geriatrics*, 17, 11.
- MURPHY, E., DINGWALL, R., GREATBATCH, D., PARKER, S. & WATSON, P. 1998. Qualitative research methods in health technology assessment: a review of the literature. *Health technology assessment (Winchester, England)*, 2, iii.
- MURPHY, M. 1998. Consensus development methods, and their use in clinical guideline development. *Health technology assessment*, 2, 1-88.
- MURRAY, C. J., RICHARDS, M. A., NEWTON, J. N., FENTON, K. A., ANDERSON, H. R., ATKINSON, C., BENNETT, D., BERNABÉ, E., BLENCOWE, H. & BOURNE, R. 2013a. UK health performance: findings of the Global Burden of Disease Study 2010. *The Lancet*, 381, 997-1020.
- MURRAY, C. J., VOS, T., LOZANO, R., NAGHAVI, M., FLAXMAN, A. D., MICHAUD, C., EZZATI, M., SHIBUYA, K., SALOMON, J. A. & ABDALLA, S. 2013b. Disability-adjusted life years (DALYs) for 291 diseases and injuries in 21 regions, 1990–2010: a systematic analysis for the Global Burden of Disease Study 2010. *The lancet*, 380, 2197-2223.
- MURRAY, E., TREWEEK, S., POPE, C., MACFARLANE, A., BALLINI, L., DOWRICK, C., FINCH, T., KENNEDY, A., MAIR, F. & O'DONNELL, C. 2010. Normalisation process theory: a framework for developing, evaluating and implementing complex interventions. *BMC Med*, 8.
- MURRAY, R. 2019. Primary care networks and the NHS long-term plan: the new player on the pitch. Available from: <https://www.kingsfund.org.uk/blog/2019/04/primary-care-networks-nhs-long-term-plan> [Accessed 21st May 2019].
- NELLIGAN, R. K., SETCHELL, J., ATKINS, L. & BENNELL, K. L. 2018. General practitioners' views on managing knee osteoarthritis: factors influencing clinical practice guideline implementation in primary care. *Osteoarthritis and Cartilage*, 26 (Supplement 1), S267.
- NICE 2014a. Developing NICE guidelines: the manual. *In: EXCELLENCE*, N. I. F. H. A. C. (ed.). London: NICE.
- NICE 2014b. Osteoarthritis care and management in adults. London: National Institute for Health & Clinical Excellence

- NIELSEN, A. P., HANSEN, J., SKORUPINSKI, B., INGENSIEP, H. W., BARANZKE, H., LASSEN, J. & SANDOE, P. 2006. Consensus Conference Manual. *LEI, onderdeel Wageningen UR*.
- NIHR. 2018. How commissioners use research evidence. Available from: <https://www.dc.nihr.ac.uk/highlights/health-commissioners-research-evidence/> [Accessed 6th April 2019].
- NILSEN, P. 2015. Making sense of implementation theories, models and frameworks. *Implementation Science*, 10, 1.
- NONAKA, L., TAKEUCHI, H. & UMEMOTO, K. 1996. A theory of organizational knowledge creation. *International Journal of Technology Management*, 11, 833-845.
- NUTLEY, S. M., WALTER, I. & DAVIES, H. 2008. Using evidence: how research can inform public services. *Public Administration*, 86, 617-18.
- O'CATHAIN, A., MURPHY, E. & NICHOLL, J. 2010. Three techniques for integrating data in mixed methods studies. *Bmj*, 341, c4587.
- OCLOO, J. & MATTHEWS, R. 2016. From tokenism to empowerment: progressing patient and public involvement in healthcare improvement. *BMJ Qual Saf*, 25, 626-632.
- OGUNDELE, M. 2011. Challenge of introducing evidence based medicine into clinical practice: An example of local initiatives in paediatrics. *Clinical Governance: An International Journal*, 16, 231-249.
- OHINMAA, A. 2006. What lessons can be learned from telemedicine programmes in other countries? *Journal of telemedicine and telecare*, 12, 40-44.
- OLIVER, K., INNVAR, S., LORENC, T., WOODMAN, J. & THOMAS, J. 2014. A systematic review of barriers to and facilitators of the use of evidence by policymakers. *BMC health services research*, 14, 2.
- ONG, B. N., MORDEN, A., BROOKS, L., PORCHERET, M., EDWARDS, J. J., SANDERS, T., JINKS, C. & DZIEDZIC, K. 2014. Changing policy and practice: making sense of national guidelines for osteoarthritis. *Social Science & Medicine*, 106, 101-109.
- ORMSTON, R., SPENCER, L., BARNARD, M. & SNAPE, D. 2014. The foundations of qualitative research. *Qualitative research practice: A guide for social science students and researchers*, 2.
- OSTERAS, N., VAN BODEGOM-VOS, L., DZIEDZIC, K., MOSENG, T., AAS, E., ANDREASSEN, O., MDALA, I., NATVIG, B., ROTTERUD, J. H., SCHJERVHEIM, U. B., VLIELAND, T. V. & HAGEN, K. B. 2015. Implementing international osteoarthritis treatment guidelines in primary health care: study protocol for the SAMBA stepped wedge cluster randomized controlled trial. *Implementation Science*, 10, 165.

- OVRETVEIT, J., HEMPEL, S., L. MAGNABOSCO, J., S. MITTMAN, B., V. RUBENSTEIN, L. & A. GANZ, D. 2014. Guidance for research-practice partnerships (R-PPs) and collaborative research. *Journal of health organization and management*, 28, 115-126.
- OXFORD 2007. Oxford English dictionary online. JSTOR.
- PARRY, D., SALSBERG, J., MACAULAY, A. C. & FCPC, C. 2009. A guide to researcher and knowledge-user collaboration in health research. *Ottawa: Canadian Institutes of Health Research*.
- PASKINS, Z., SANDERS, T., CROFT, P. R. & HASSELL, A. B. 2015. The Identity Crisis of Osteoarthritis in General Practice: A Qualitative Study Using Video-Stimulated Recall. *Annals of family medicine*, 13, 537-44.
- PASKINS, Z., SANDERS, T. & HASSELL, A. B. 2013. What influences patients with osteoarthritis to consult their GP about their symptoms? A narrative review. *BMC family practice*, 14, 195.
- PASKINS, Z., SANDERS, T. & HASSELL, A. B. 2014. Comparison of patient experiences of the osteoarthritis consultation with GP attitudes and beliefs to OA: a narrative review. *BMC family practice*, 15, 46.
- PAWSON, R. & TILLEY, N. 1997. *An introduction to scientific realist evaluation. Evaluation for the 21st century: A handbook*, England, Sage.
- PEARSON, N. 2019. Easing the pressure in primary care. Available from: <https://www.england.nhs.uk/blog/easing-the-pressure-in-primary-care/> [Accessed 9th April 2019].
- PERCHESKI, C. & HARGITTAI, E. 2011. Health information-seeking in the digital age. *Journal of American College Health*, 59, 379-386.
- PETERS, D. H., ADAM, T., ALONGE, O., AGYEPONG, I. A. & TRAN, N. 2013. Implementation research: what it is and how to do it. *Bmj*, 347, f6753.
- POPAY, J., ROBERTS, H., SOWDEN, A., PETTICREW, M., ARAI, L., RODGERS, M., BRITTEN, N., ROEN, K. & DUFFY, S. 2006. Guidance on the conduct of narrative synthesis in systematic reviews. *A product from the ESRC methods programme Version*, 1, b92.
- POPAY, J., ROGERS, A. & WILLIAMS, G. 1998. Rationale and standards for the systematic review of qualitative literature in health services research. *Qualitative health research*, 8, 341-351.
- POPE, C., HALFORD, S., TURNBULL, J., PRICHARD, J., CALESTANI, M. & MAY, C. 2013. Using computer decision support systems in NHS emergency and urgent care: ethnographic study using normalisation process theory. *BMC health services research*, 13, 111.

- POPE, C., MAYS, N. & POPAY, J. 2007. *Synthesising qualitative and quantitative health evidence: A guide to methods: A guide to methods*, McGraw-Hill Education (UK).
- POPE, C., ZIEBLAND, S. & MAYS, N. 2000. Analysing qualitative data. *Bmj*, 320, 114-116.
- PORCHERET, M., GRIME, J., MAIN, C. & DZIEDZIC, K. 2013a. Developing a model osteoarthritis consultation: a Delphi consensus exercise. *BMC musculoskeletal disorders*, 14, 25.
- PORCHERET, M., GRIME, J., MAIN, C. & DZIEDZIC, K. 2013b. Developing a model osteoarthritis consultation: a Delphi consensus exercise. *BMC musculoskeletal disorders*, 14, 1.
- PORCHERET, M., JORDAN, K. & CROFT, P. 2006. Treatment of knee pain in older adults in primary care: development of an evidence-based model of care. *Rheumatology*, 46, 638-648.
- PORCHERET, M., JORDAN, K. & JINKS, C. 2007. Primary care treatment of knee pain—a survey in older adults. *Rheumatology*, 46, 1694-1700.
- PORCHERET, M., MAIN, C., CROFT, P. & DZIEDZIC, K. 2018. Enhancing delivery of osteoarthritis care in the general practice consultation: evaluation of a behaviour change intervention. *BMC family practice*, 19, 26.
- PORCHERET, M., MAIN, C., CROFT, P., MCKINLEY, R., HASSELL, A. & DZIEDZIC, K. 2014. Development of a behaviour change intervention: a case study on the practical application of theory. *Implementation science : IS*, 9, 42.
- PRIOR, M., GUERIN, M. & GRIMMER-SOMERS, K. 2008. The effectiveness of clinical guideline implementation strategies—a synthesis of systematic review findings. *Journal of evaluation in clinical practice*, 14, 888-897.
- PROCTOR, E. K., POWELL, B. J. & MCMILLEN, J. C. 2013. Implementation strategies: recommendations for specifying and reporting. *Implementation Science*, 8, 1.
- PROCTOR, E. K. & ROSEN, A. 2008. From knowledge production to implementation: Research challenges and imperatives. *Research on Social Work Practice*, 18, 285-291.
- PUTNAM, H. 1995. *Pragmatism: An open question*, Blackwell Oxford.
- QUICKE, J. G., COTTRELL, E., DUFFY, H., SOMERVILLE, S., OXTOBY, J., WALLBANKS, A., CAMPBELL, L., BLACKBURN, S., STEVENSON, K., COOPER, V., FINNEY, A., WATHALL, S., EDWARDS, J. J., EVANS, N. & DZIEDZIC, K. 2019. Implementing and evaluating a pilot physiotherapist-led osteoarthritis clinic in general practice. *Physiotherapy (United Kingdom)*, 105 (Supplement 1), e33-e34.

- RAMAGE, C., CURTIS, K., GLYNN, A., MONTGOMERY, J., HOOVER, E., LENG, J., MARTIN, C., THEODOSIUS, C. & GALLAGHER, A. 2017. Developing and using a toolkit for cultivating compassion in healthcare: an appreciative inquiry approach. *International Journal of Practice-based Learning in Health and Social Care*, 5, 42-64.
- RANMUTHUGALA, G., PLUMB, J. J., CUNNINGHAM, F. C., GEORGIU, A., WESTBROOK, J. I. & BRAITHWAITE, J. 2011. How and why are communities of practice established in the healthcare sector? A systematic review of the literature. *BMC health services research*, 11, 273.
- ROBERTS, J. 2006. Limits to communities of practice. *Journal of management studies*, 43, 623-639.
- RORTY, R. 1999. *Philosophy and social hope*, Penguin UK.
- ROWLEY, E., MORRIS, R., CURRIE, G. & SCHNEIDER, J. 2012. Research into practice: collaboration for leadership in applied health research and care (CLAHRC) for Nottinghamshire, Derbyshire, Lincolnshire (NDL). *Implementation Science*, 7, 40.
- RUTHERFORD, J., LEIGH, J., MONK, J. & MURRAY, C. 2005. Creating an organizational infrastructure to develop and support new nursing roles—a framework for debate. *Journal of Nursing Management*, 13, 97-105.
- RYAN, M., SCOTT, D., REEVES, C., BATE, A., VAN TEIJLINGEN, E., RUSSELL, E., NAPPER, M. & ROBB, C. 2001. Eliciting public preferences for healthcare: a systematic review of techniques.
- RYCROFT-MALONE, J. 2004. The PARIHS framework—A framework for guiding the implementation of evidence-based practice. *Journal of nursing care quality*, 19, 297-304.
- RYCROFT-MALONE, J. 2014. From knowing to doing—from the academy to practice Comment on “The many meanings of evidence: implications for the translational science agenda in healthcare”. *International journal of health policy and management*, 2, 45.
- RYCROFT-MALONE, J., BURTON, C., WILKINSON, J., HARVEY, G., MCCORMACK, B., BAKER, R., DOPSON, S., GRAHAM, I., STANISZEWSKA, S. & THOMPSON, C. 2015. Collective action for knowledge mobilisation: a realist evaluation of the Collaborations for Leadership in Applied Health Research and Care. *Health Services and Delivery Research*, 3.
- RYCROFT-MALONE, J., WILKINSON, J., BURTON, C. R., HARVEY, G., MCCORMACK, B., GRAHAM, I. & STANISZEWSKA, S. 2013. Collaborative action around implementation in Collaborations for Leadership in Applied Health Research and Care: towards a programme theory. *Journal of health services research & policy*, 18, 13-26.

- SACKETT, D. L., ROSENBERG, W. M., GRAY, J. M., HAYNES, R. B. & RICHARDSON, W. S. 1996. Evidence based medicine: what it is and what it isn't. British Medical Journal Publishing Group.
- SAKELLARIOU, G., CONAGHAN, P. G., ZHANG, W., BIJLSMA, J. W., BOYESEN, P., D'AGOSTINO, M. A., DOHERTY, M., FODOR, D., KLOPPENBURG, M. & MIESE, F. 2017. EULAR recommendations for the use of imaging in the clinical management of peripheral joint osteoarthritis. *Annals of the rheumatic diseases*, annrheumdis-2016-210815.
- SALISBURY, C., JOHNSON, L., PURDY, S., VALDERAS, J. M. & MONTGOMERY, A. A. 2011. Epidemiology and impact of multimorbidity in primary care: a retrospective cohort study. *Br J Gen Pract*, 61, e12-e21.
- SALMON, P., PETERS, S., ROGERS, A., GASK, L., CLIFFORD, R., IREDALE, W., DOWRICK, C. & MORRIS, R. 2007. Peering through the barriers in GPs' explanations for declining to participate in research: the role of professional autonomy and the economy of time. *Family Practice*, 24, 269-275.
- SANGSTER-GORMLEY, E., MARTIN-MISENER, R., DOWNE-WAMBOLDT, B. & DICENSO, A. 2011. Factors affecting nurse practitioner role implementation in Canadian practice settings: an integrative review. *Journal of advanced nursing*, 67, 1178-1190.
- SCARBROUGH, H., D'ANDRETA, D., EVANS, S., MARABELLI, M., NEWELL, S., POWELL, J. & SWAN, J. 2014. Networked innovation in the health sector: comparative qualitative study of the role of Collaborations for Leadership in Applied Health Research and Care in translating research into practice.
- SCHERS, H., WENSING, M., HUIJSMANS, Z., VAN TULDER, M. & GROL, R. 2001. Implementation barriers for general practice guidelines on low back pain: a qualitative study. *Spine*, 26, E348-E353.
- SCHWANDT, T. A., LINCOLN, Y. S. & GUBA, E. G. 2007. Judging interpretations: but is it rigorous? trustworthiness and authenticity in naturalistic evaluation. *New directions for evaluation*, 2007, 11-25.
- SHAW, R. J., KAUFMAN, M. A., BOSWORTH, H. B., WEINER, B. J., ZULLIG, L. L., LEE, S.-Y. D., KRAVETZ, J. D., RAKLEY, S. M., ROUMIE, C. L. & BOWEN, M. E. 2013. Organizational factors associated with readiness to implement and translate a primary care based telemedicine behavioral program to improve blood pressure control: the HTN-IMPROVE study. *Implementation Science*, 8, 106.
- SHEA, M. P. & LEWKO, J. H. 1995. Use of a stakeholder advisory group to facilitate the utilization of evaluation results. *The Canadian Journal of Program Evaluation*, 10, 159.
- SHEPHERD, J., HARDEN, A., REES, R., BRUNTON, G., GARCIA, J., OLIVER, S. & OAKLEY, A. 2006. Young people and healthy eating: a systematic

review of research on barriers and facilitators. *Health education research*, 21, 239-257.

- SKOU, S. T., SIMONSEN, M. E. & ROOS, E. M. 2014. Good life with arthritis in denmark (GLA: D)-implementation of evidence-based care for knee and hip osteoarthritis in clinical practice. *Osteoarthritis and Cartilage*, 22, S457-S458.
- SMINK, A. J., VAN DEN ENDE, C. H., VLIELAND, T. P. V., SWIERSTRA, B. A., KORTLAND, J. H., BIJLSMA, J. W., VOORN, T. B., SCHERS, H. J., BIERMA-ZEINSTRAS, S. M. & DEKKER, J. 2011. "Beating osteoARThritis": development of a stepped care strategy to optimize utilization and timing of non-surgical treatment modalities for patients with hip or knee osteoarthritis. *Clinical rheumatology*, 30, 1623-1629.
- SMITH, T. O., PURDY, R., LISTER, S., SALTER, C., FLEETCROFT, R. & CONAGHAN, P. G. 2014. Attitudes of people with osteoarthritis towards their conservative management: a systematic review and meta-ethnography. *Rheumatology international*, 34, 299-313.
- SOPER, B., HINRICHS, S., DRABBLE, S., YAQUB, O., MARJANOVIC, S., HANNEY, S. & NOLTE, E. 2015. Delivering the aims of the Collaborations for Leadership in Applied Health Research and Care: understanding their strategies and contributions.
- SPCR. 2016. Milestone moment for Keeles' Research User Group. Available from: <https://www.spcr.nihr.ac.uk/news/blog/milestone-moment-for-keele2019s-research-user-grouphttps://> [Accessed 22nd March 2019].
- SPENCER, L. & RITCHIE, J. 2002. Qualitative data analysis for applied policy research. *Analyzing qualitative data*. Routledge.
- SPEROFF, T. & O'CONNOR, G. T. 2004. Study designs for PDSA quality improvement research. *Quality Management in Healthcare*, 13, 17-32.
- STANISZEWSKA, S., BRETT, J., MOCKFORD, C. & BARBER, R. 2011. The GRIPP checklist: strengthening the quality of patient and public involvement reporting in research. *International journal of technology assessment in health care*, 27, 391-399.
- STANISZEWSKA, S., BRETT, J., SIMERA, I., SEERS, K., MOCKFORD, C., GOODLAD, S., ALTMAN, D., MOHER, D., BARBER, R. & DENEGRIS, S. 2017. GRIPP2 reporting checklists: tools to improve reporting of patient and public involvement in research. *Research involvement and engagement*, 3, 13.
- STEEL, N., BACHMANN, M., MAISEY, S., SHEKELLE, P., BREEZE, E., MARMOT, M. & MELZER, D. 2008. Self reported receipt of care consistent with 32 quality indicators: national population survey of adults aged 50 or more in England. *Bmj*, 337, a957.

- STETLER, C. B., DAMSCHRODER, L. J., HELFRICH, C. D. & HAGEDORN, H. J. 2011. A guide for applying a revised version of the PARIHS framework for implementation. *Implementation Science*, 6, 99.
- STURGES, J. E. & HANRAHAN, K. J. 2004. Comparing telephone and face-to-face qualitative interviewing: a research note. *Qualitative research*, 4, 107-118.
- SWAITHES, L., FINNEY, A., PASKINS, Z. & DZIEDZIC, K. 2019. Optimising implementation of research findings in primary care: results from a qualitative study. *Physiotherapy (United Kingdom)*, 105 (Supplement 1), e11.
- SWAN, J., CLARKE, A., NICOLINI, D., POWELL, J., SCARBROUGH, H., ROGINSKI, C., GKEREDAKIS, E., MILLS, P. & TAYLOR-PHILLIPS, S. 2012. Evidence in management decisions (EMD)—advancing knowledge utilization in healthcare management. *Final Report. NIHR Health Services and Delivery Programme*.
- SWAN, J., GKEREDAKIS, E., MANNING, R. M., NICOLINI, D., SHARP, D. & POWELL, J. 2017. Improving the capabilities of NHS organisations to use evidence: a qualitative study of redesign projects in Clinical Commissioning Groups. *Health Services and Delivery Research*, 5.
- SWAN, J., NEWELL, S. & NICOLINI, D. 2016. *Mobilizing Knowledge in Health Care: Challenges for Management and Organization*, Oxford University Press.
- TABAK, R. G., KHOONG, E. C., CHAMBERS, D. A. & BROWNSON, R. C. 2012. Bridging Research and Practice: Models for Dissemination and Implementation Research. *Am J Prev Med*, 43.
- TESCH, R. 2013. *Qualitative Types: Analysis Typ*, Routledge.
- THOMAS, E., PEAT, G., HARRIS, L., WILKIE, R. & CROFT, P. R. 2004. The prevalence of pain and pain interference in a general population of older adults: cross-sectional findings from the North Staffordshire Osteoarthritis Project (NorStOP). *Pain*, 110, 361-368.
- THOMAS, J. & HARDEN, A. 2008. Methods for the thematic synthesis of qualitative research in systematic reviews. *BMC medical research methodology*, 8, 45.
- THOMAS, J., KAVANAGH, J., TUCKER, H., BURCHETT, H., TRIPNEY, J. & OAKLEY, A. 2007. Accidental injury, risk-taking behaviour and the social circumstances in which young people (aged 12-24) live: a systematic review. In: CENTRE, E. (ed.). London: EPPI-Centre, Social University of London.
- THOMAS, M. J., MOORE, A., RODDY, E. & PEAT, G. 2013a. 'somebody to say "come on, we can sort this" ': A qualitative study of health-seeking in older adults with symptomatic foot osteoarthritis. *Rheumatology (United Kingdom)*, 1), i124.

- THOMAS, M. J., MOORE, A., RODDY, E. & PEAT, G. 2013b. "Somebody to say 'come on we can sort this'": a qualitative study of primary care consultation among older adults with symptomatic foot osteoarthritis. *Arthritis care & research*, 65, 2051-2055.
- THORSTENSSON, C. A., GARELLICK, G., RYSTEDT, H. & DAHLBERG, L. E. 2015. Better management of patients with osteoarthritis: development and nationwide implementation of an evidence-based supported osteoarthritis self-management programme. *Musculoskeletal care*, 13, 67-75.
- TONG, A., SAINSBURY, P. & CRAIG, J. 2007. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *International journal for quality in health care*, 19, 349-357.
- TONKIN-CRINE, S., ANTHIERENS, S., HOOD, K., YARDLEY, L., CALS, J. W., FRANCIS, N. A., COENEN, S., VAN DER VELDEN, A. W., GODYCKI-CWIRKO, M. & LLOR, C. 2015. Discrepancies between qualitative and quantitative evaluation of randomised controlled trial results: achieving clarity through mixed methods triangulation. *Implementation science*, 11, 66.
- TOOTH, S., ONG, B. & FOSTER, N. Using a conceptual framework to study the introduction of a new approach to the assessment and treatment of low back pain in primary care. International Forum X for Low Back Pain Research in Primary Care 06.06. 09.; Boston, USA, 1998.
- TURNER, S., D'LIMA, D., HUDSON, E., MORRIS, S., SHERINGHAM, J., SWART, N. & FULOP, N. J. 2017. Evidence use in decision-making on introducing innovations: a systematic scoping review with stakeholder feedback. *Implementation Science*, 12, 145.
- VAN DER HEIJDE, D., ALETAHA, D., CARMONA, L., EDWARDS, C. J., KVIEN, T. K., KOULOUMAS, M., MACHADO, P., OLIVER, S., DE WIT, M. & DOUGADOS, M. 2015. 2014 Update of the EULAR standardised operating procedures for EULAR-endorsed recommendations. *Annals of the rheumatic diseases*, 74, 8-13.
- VINDROLA-PADROS, C., EYRE, L., BAXTER, H., CRAMER, H., GEORGE, B., WYE, L., FULOP, N. J., UTLEY, M., PHILLIPS, N. & BRINDLE, P. 2019. Addressing the challenges of knowledge co-production in quality improvement: learning from the implementation of the researcher-in-residence model. *BMJ Qual Saf*, 28, 67-73.
- WALLACE, E., SALISBURY, C., GUTHRIE, B., LEWIS, C., FAHEY, T. & SMITH, S. M. 2015. Managing patients with multimorbidity in primary care. *bmj*, 350, h176.
- WALSH, D. & DOWNE, S. 2006. Appraising the quality of qualitative research. *Midwifery*, 22, 108-119.

- WALSHE, K., HARVEY, G., SKELCHER, C. & JAS, P. 2009. Could do better? Knowledge, learning and performance improvement in public services.
- WARD, M. M., BALOH, J., ZHU, X. & STEWART, G. L. 2017. Promoting Action on Research Implementation in Health Services framework applied to TeamSTEPPS implementation in small rural hospitals. *Health care management review*, 42, 2-13.
- WARD, V. 2017. Why, whose, what and how? A framework for knowledge mobilisers. *Evidence & Policy: A Journal of Research, Debate and Practice*, 13, 477-497.
- WARD, V., SMITH, S., HOUSE, A. & HAMER, S. 2012. Exploring knowledge exchange: a useful framework for practice and policy. *Soc Sci Med*, 74.
- WARING, J., CURRIE, G., CROMPTON, A. & BISHOP, S. 2013. An exploratory study of knowledge brokering in hospital settings: Facilitating knowledge sharing and learning for patient safety? *Social Science & Medicine*, 98, 79-86.
- WARING, J., MARSHALL, F., BISHOP, S., SAHOTA, O., WALKER, M. F., CURRIE, G., FISHER, R. J. & AVERY, T. J. 2014. An ethnographic study of knowledge sharing across the boundaries between care processes, services and organisations: the contributions to 'safe' hospital discharge. *Health Services and Delivery Research*, 2, 1-160.
- WEINER, B. 2009. A theory of organizational readiness for change. *Implement Sci*, 4.
- WENGER, E. 1998. *Communities of practice: Learning, meaning, and identity*, Cambridge university press.
- WENGER, E. 2011. *Communities of practice: A brief introduction*.
- WENGER, E., MCDERMOTT, R. A. & SNYDER, W. 2002. *Cultivating communities of practice: A guide to managing knowledge*, Harvard Business Press.
- WENSING, M., VAN DER WEIJDEN, T. & GROL, R. 1998. Implementing guidelines and innovations in general practice: which interventions are effective? *Br J Gen Pract*, 48, 991-997.
- WHO 1978. Primary Care Report. Report of the International conference on Primary Care, Alma-Ata, Union of Soviet Socialist Republics, 6-12 September 1978.: World Health Organisation.
- WIERINGA, S. & GREENHALGH, T. 2015. 10 years of mindlines: a systematic review and commentary. *Implementation Science*, 10, 45.
- WONG, G. 2009. What is a realist review and what can it do for me?
- WOOLF, S. H. 2008. The Meaning of Translational Research and Why it Matters. *JAMA*, 299.

- WRIGHT, N. 2013. First-time knowledge brokers in health care: the experiences of nurses and allied health professionals of bridging the research-practice gap. *Evidence & Policy: A Journal of Research, Debate and Practice*, 9, 557-570.
- WYE, L., BRANGAN, E., CAMERON, A., GABBAY, J., KLEIN, J. H. & POPE, C. 2015. Knowledge exchange in health-care commissioning: case studies of the use of commercial, not-for-profit and public sector agencies, 2011-14.
- YAMADA, J., SHORKEY, A., BARWICK, M., WIDGER, K. & STEVENS, B. J. 2015. The effectiveness of toolkits as knowledge translation strategies for integrating evidence into clinical care: a systematic review. *BMJ open*, 5, e006808.
- YARDLEY, L. 2000. Dilemmas in qualitative health research. *Psychology and health*, 15, 215-228.
- YIN, R. K. 2014. *Case study research: Design and methods*, Sage publications.
- YU, C. H. 1994. Abduction? Deduction? Induction? Is There a Logic of Exploratory Data Analysis?
- ZAHRA, S. A. & GEORGE, G. 2002. Absorptive capacity: A review, reconceptualization, and extension. *Academy of management review*, 27, 185-203.
- ZHANG, W., DOHERTY, M., LEEB, B., ALEKSEEVA, L., ARDEN, N., BIJLSMA, J., DINÇER, F., DZIEDZIC, K., HÄUSELMANN, H. & HERRERO-BEAUMONT, G. 2007. EULAR evidence based recommendations for the management of hand osteoarthritis: report of a Task Force of the EULAR Standing Committee for International Clinical Studies Including Therapeutics (ESCISIT). *Annals of the rheumatic diseases*, 66, 377-388.
- ZHANG, W., MOSKOWITZ, R., NUKI, G., ABRAMSON, S., ALTMAN, R., ARDEN, N., BIERMA-ZEINSTRA, S., BRANDT, K., CROFT, P. & DOHERTY, M. 2008. OARSI recommendations for the management of hip and knee osteoarthritis, Part II: OARSI evidence-based, expert consensus guidelines. *Osteoarthritis and cartilage*, 16, 137-162.
- ZIEBLAND, S. & MCPHERSON, A. 2006. Making sense of qualitative data analysis: an introduction with illustrations from DIPEX (personal experiences of health and illness). *Medical education*, 40, 405-414.

Appendix

Appendix 1: International work programs for the implementation of evidence-based practice for osteoarthritis

Name of program of work	Context	Aim/overview	Development	Intervention
Beating osteoarthritis (BART)	The Netherlands	Multidisciplinary, patient-centred, stepped care strategy presenting the order of non-surgical treatment options for hip or knee OA in three steps	<p>By a steering group in three phases:</p> <p>Review of guidelines and literature to formulate first draft based on consensus</p> <p>23 stakeholders commented on a set of questions to refine second draft</p> <p>Invitational conference for discussion, feedback and consensus on final version</p>	<p>Step 1 – education, lifestyle advice and medication</p> <p>Step 2 – exercise therapy, medication, referral to dietician if appropriate</p> <p>Step 3 – multidisciplinary care, injections, TENS</p>
Better management of patients with OsteoArthritis (BOA)	Sweden	<p>Offer evidence-based OA information and exercise</p> <p>Supported OA self-management</p>	The programme was developed and tested using 4 focus groups to inform researchers on the context and modes of delivery	Physiotherapist, occupational therapist and OA communicator ('expert patient') delivered 2x group theoretical sessions of 90 minutes for education,

		<p>programme delivered by trained physiotherapists</p> <p>The programme combined peer and healthcare professional delivered information and individually adapted exercise</p>		<p>supported self-management, physical activity recommendations, optional individualised group exercise session</p>
<p>Enabling self-management and coping with arthritic pain through exercise ESCAPE-pain programme</p>	<p>England</p>	<p>Rehabilitation program comprising exercise, self-management and active coping strategies.</p>		<p>Physiotherapist led course. The programme includes a combination of education, self-management and coping advice with physical exercises delivered twice weekly for 10-12 sessions</p>
<p>Good Life with Arthritis in Denmark (GLA:D)</p>	<p>Denmark</p>	<p>To implement guidelines for the treatment of knee and hip OA in clinical care nationwide using a combined approach consisting of patient education, exercise and weight management,</p>	<p>Three mandatory elements: a two-day course for physiotherapists; 8 weeks of education and supervised neuromuscular exercise for patients with hip and knee OA delivered by a trained physiotherapist in clinical practice; and the national GLA:D registry with data</p>	<p>Treatment program for patients with hip and knee OA taught to physiotherapists over a two-day course</p> <p>Register holding data from baseline assessment, 3 month and 12 month follow up</p> <p>Intervention consists of 3x 1.5 hour sessions of patient education and 12 sessions of</p>

			from baseline, 3 and 12 months	individualised, physiotherapist supervised neuromuscular exercise
Managing osteoarthritis in consultations (MOSAICS)	England	A model OA consultation (including quality indicators and written information) and HCP training	<p>Electronic template to record quality indicators of OA care</p> <p>GP- model OA consultation to include diagnosis explanation, provides written information (the OA Guidebook), analgesia, and onward referral to practice nurse.</p> <p>Practice nurse – up to 4 sessions supporting self-management including exercise, physical activity, weight management, analgesia, education</p> <p>Evaluation of process and outcomes</p>	Practice nurse trained to provide OA consultations and follow up
PARTNER	Australia	To assess success of the implementation plan, PARTNER model fidelity, identify contextual influences on scalability		<p>GP intervention– confirm diagnosis,</p> <p>Centralised multidisciplinary service: the PARTNER Care</p>

		and sustainability and identify cost considerations for scale up.		Support Team (CST) intervention – CST are trained in behaviour change support and evidence-based knee OA management. The CST work with the patient to develop a collaborative action plan focussed on self-management. Patients also receive tailored OA educational materials, a leg strengthening program, and access to a weight-loss program
SAMBA	Norway	<p>Model for integrated OA care and workshop training</p> <p>Drafts presented at focus groups (n=3) with multidisciplinary stakeholders</p>	<p>GP intervention – provide diagnosis, information and referral to physiotherapy</p> <p>Physiotherapy intervention – initial assessment of examination, functional testing and goal setting. Follow up education sessions and exercise sessions offered based on principles for motivational interviewing to support lifestyle change, increase self-efficacy and solve ambivalence. Repeat physical function tests.</p>	<p>Patient OA education: 3 hours</p> <p>Physiotherapy: two group exercise classes per week for 8-12 weeks</p>

			<p>OA information booklet and exercise diary to reinforce information.</p> <p>GP review consultation to review treatment and discuss self-management and potential onward referral</p>	
--	--	--	--	--

Appendix 2: Stakeholder advisory group key topic areas, agenda and running schedule

Stakeholder Advisory Group (SAG) key topic areas

- The four domains of the framework developed by Lau et al
- Barriers and facilitators to closing the evidence to practice gap
- How to utilise best evidence in clinical practice?
- Local issues regarding KM and implementation in primary care

Stakeholder Advisory Group (SAG) Running Schedule - 16th May 2017 – 6.30-8.30pm

Project Title: Getting evidence into practice – mobilisation of research knowledge in primary care

Checklist:

- 2 x Digital recorders + spare batteries (additional x 1 iPad as backup to improve quality of recording in different locations of the room)
- Participant packs, to include; Expense forms for completion on arrival & copies of information sheets and Lau article(s) for participant information, clock, pens and paper for participants to make notes
- Room booking, setting up of environment & refreshments (tea, coffee, water, food), participant number/name cards for tables.

Research team:

Laura Marshall, Student Researcher	Presenting evidence to SAG and observer
Krysia Dziedzic, Lead Supervisor	Presenting background of MOSAICS and JIGSAW, field note keeper (shared with AF) Observing process and overall feedback
Andrew Finney, Field note keeper and supervisor	Field note keeper (body language, intonation of individual participants & engagement/overall dynamics of the group) & in charge of recording/timing.
Zoe Paskins, Chair	Facilitator of SAG after KM evidence and background have been presented by LM and KD

Time and probes/prompts	Schedule of events and topic guide
-------------------------	------------------------------------

6.00 – 6.30	<p>Welcome refreshments, registration by Kryisia & Zoe and Laura will issue/aid completion of participant packs (article, info sheet, expense forms).</p>
<p>6.30</p> <p>Zoe Paskins</p>	<p>Introduction & housekeeping.</p> <ul style="list-style-type: none"> • Chair will welcome attendees and express thanks for taking the time to attend. • Introduction of lead researcher & facilitators and their roles • Explain timings of meeting, toilets, fire, refreshments • Explain purpose of the meeting • Researcher will record participants name on a log, and attribute a participant number/ask them to complete name card • Researcher will clarify that the SAG will be audiotaped and will show the participants the digital recorder that will be used to record the discussions. • The researcher will clearly state when the recorder is being switched on & off • ? warm up/ice breaker here if deemed necessary
Kryisia Dziedzic	<p>Present the context/background of MOSIACS/JIGSAW/Implementation Accelerator Unit</p>

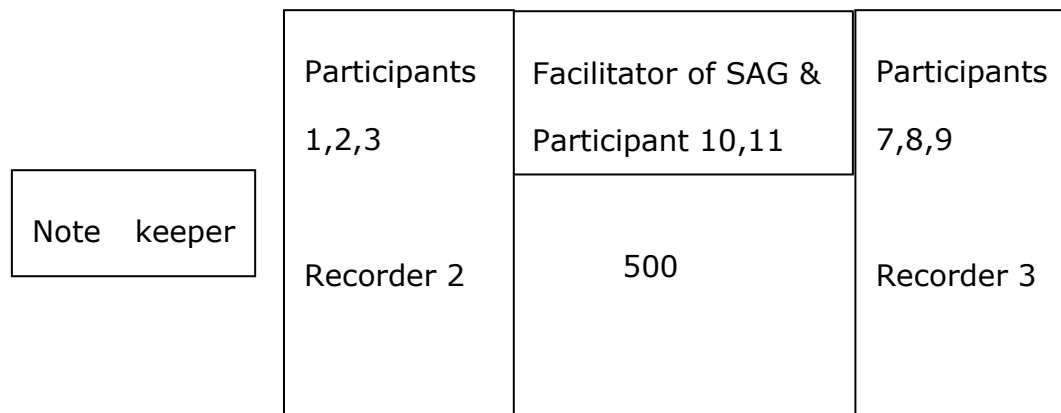
	KD to present – 15 mins MAX
Laura Marshall	<p>Present the current evidence of KM recommendations in primary care – the researcher will explain the following:</p> <ul style="list-style-type: none"> ➤ Overview to the Lau paper – research questions, aims, methods ➤ Framework ➤ Recommendations ➤ The researcher will present the key findings of the evidence that has been identified via Rosa Lau’s paper this should take approx. 15 mins
7.00 Zoe Paskins	<p>Discussion</p> <ul style="list-style-type: none"> • Initial thoughts, gut reactions? • Chair to advise participants to write down any thoughts/questions that may be generated during the presentation on the paper supplied. These can then be discussed during the SAG and therefore included in the field notes. These will then be collected in at the end and shredded.
7.15	The follow themes will be discussed;

	<p>The main focus of the topics with the SAG is to</p> <ol style="list-style-type: none"> 1. Obtain views and opinions of the evidence presented in the literature 2. Discuss in relation to clinical practice
<p>Suggestions of Prompts to help discussions</p> <p>Why?</p> <p>Examples?</p> <p>What makes you say that?</p> <p>What do others think?</p>	<p>Slide 1 – External context</p> <p>Slide 2 – Organisation</p> <p>Slide 3 - Professional</p> <p>Slide 4 – Intervention</p> <p>Slide with framework on to refer back to</p> <ol style="list-style-type: none"> 1. What are your thoughts on the evidence that has been presented to you? 2. How do you feel these factors affect KM? 3. What do you think would work (or not) in your organisation? Why?

Can you describe in more detail?	
	<p>Supplementary Questions to generate further discussion on above topics if required:</p> <ul style="list-style-type: none"> ➤ What are your thoughts/experiences with regard to what is recommended for KM? ➤ Can you expand on any local issues? ➤ What challenges are you aware of with regard to implementation in primary care? ➤ In your experience what do you feel are the main barriers and enablers/solutions to closing the evidence to practice gap in primary care? ➤ Has everybody had an opportunity to say what they wanted to?
8.30 Zoe	Chair will then thank the participants & research team for taking part and advise them that the tape is being switched off.
8.30/following day	After the participants have left the room, the researcher and facilitators need to complete a oral reflection/debrief on the process.

All research team	<p>Laura will record this information as field notes e.g.</p> <ul style="list-style-type: none"> • Timing of meeting as a whole • Length of each session • Clarity of presentation • General engagement • Environment • Equipment • Allocated roles • Paperwork
-------------------	---

Seating plan of SAG - Diagrammatic representation of a circle – Participant numbers will be on the table and participants will self-select where they sit.



Recorder 1

Participants 4,5,6

Field note keeper 1 – example (these are used to support analysing the data from the recordings)

Slide number	Participant number	Key Notes – individual participants body language, voice intonation, engagement & over all dynamics/interaction of the group	Key Quotes –
	1	Quietly spoken. Leaned forward.	"I think that.....
	3		"but I thought.....

		Interrupted. Folded arms.	
	all	Nodding of heads in the group to P3 response above	"has anybody else found that.....
	1,5,6	Shook heads to P4's response	" I would disagree.....

Guidance for field note taker:-

- **Insightful quotes are captured as completely as possible on the right hand side**
- **When the facilitator moves to another question, a horizontal line is drawn under the information logged. This allows the researcher to go back & locate the relative field notes to a specific question when reviewing the recordings.**

Appendix 3: Stakeholder advisory group summary field notes

Field notes from stakeholder advisory group 16-May-2017

General introductions and icebreaker

LM presented recent evidence (papers by Lau et al)

ZP asked the group what they understood by the term knowledge mobilisation (KM) and what the difference was between this and implementation. A few comments were made at this point regarding the ever-changing terminology and that knowledge mobilisation now being replaced with knowledge **transformation**. The general consensus was the KM was about moving knowledge to where is most useful – practitioners and patients, whereas implementation more about the staff and the organisation.

Interesting point raised from the article was the strategies that didn't work included financial incentive and local champion which seemed surprising to the group.

05 commented that it was clear that academia is not working at the same rate as the clinical environment and it's important to be adaptable. Rate of change is unprecedented, and firefighting is part of everyday life. 03 – this is a good thing and we should embrace change because times are changing, and we need to live in the real world. 02 – there are some constants and things stay the same such as we will always have patients and clinicians to treat them. 03 – what is the end point? Need to be adaptable for chaos and change.

Overall comments on the framework – reflections from 06 regarding another implementation project and the lessons learned; the language used to translate implementation to patients, commissioners is very important and different data useful for different components, external context. Local/internal context very important with start back. Credibility is key because you need someone who is seen credible to deliver a message (GP to GP).

- 04 - You could do everything according to the research but all the patients are completely different – feel more empowered to implement the evidence but deal with condition different, may not be effective because the people are different and your health is personal to you.
- 06 – analogy - Can't replicate innovation – take out and plug it in like a toaster, can't expect it to work the same. It is really important that everything is co-created. The consistent thing in all of this is the patient and that appears to be an omission on the framework.
- General discussion around KM and implementation and the role of the patient, what is the nature of intervention – is it aimed at patients, what are patient preferences – does this fit with framework? Doesn't fit in any one area. Interesting point. Work as hard as you like to get GPs to implement X but if you don't work with patients then you're not going to get as far as you potentially could.
- 02 - Shocking that the patient not on framework explicitly which is important because the dominant paradigms that people hold are key. The 10 min consultation is an important driver.

- 04 – Not just public awareness from daily mail but the patient, carers, family, and friends is a real omission from framework. Patient choice is a clear driver.

Access to information has changed – it is easier to access but harder to interpret. The public respond to media stories. Media stories. E.g. not evidence based but people have very strong opinions. Strong message (sales pitch) from academia to make a clear, strong, responsive message. Vaccine debate. VJ - Patients need to make choice but with the right information. Before patient sees rheumatology, already seen 7 people – internet, friends, family etc. the future is that patients will make these decisions, community-based appointments, new way of thinking, technology, what does the framework mean for what we will see in coming years? New models of care, group impact, patients and carers community is SO important

05 – academia needs to move away from default position for doing research, which is timely, and consider innovative methodologies which are creative, quicker and engaging. Need to be strong and responsive. As good as research is, it's just not contextual, even a pragmatic RCT, commissioners given confidence if an initiative/outcome is within their local context. Contextual information may be better than quality evidence. Suggestion that different data will shift thinking and adopt behaviour – local audit, what's happening locally. Definite need for local data.

04 - You're more likely to listen to someone who is more like yourself – GPs don't want to wade through lots of data (university advert), want similar practice, similar size – this is what we do, and this is how it works. Groups

set the agenda, community matron work, get people with LTCs together and they set the agenda.

Research needs to be forward thinking and innovative but don't know what 10 years' time looks like? What aiming for?

Decide what you want to achieve 1st. don't get caught up doing something that you can't adapt to, need to be able to adapt to chaos in the new world. Moving rapidly.

01 and 06 - Everything we do should be co-created, involving researchers, commissioners, patients so that we are getting the right questions that are relevant to where we are now, involve patients as much as possible. Don't separate academics, commissioners, patients.

Research question has to be right – does that fit with RL framework. Imaginative implementation – what we do with evidence when we have it. If the research, we do in the first place isn't the right research then it won't be implemented because you are trying to fit a saddle on a cow! Shoehorn. Things will take hold if patients say 'we need research on this' – people are receptive because they want/need it.

Consistency throughout this is the patient – irrespective of the model

Priority setting partnership – setting the right research questions

External context

03 – consider new models of care moving forward. NW - to practitioners dealing with change and do they have energy to implement new research,

needs to be easy to do the right thing, within their paradigm, believable – NICE guideline can seem divorced from reality (02).

04 - Campaigns, cyclical, no Brian Cox for research, advocate? Who tells the public – this is the best treatment for this condition? Media influence.

03 - Need to decide what your role is and where you sit? Looks like you are coming into the interface in the pathway between NIHR producing evidence and the commissioners implementing it – are you more worried about the implementation? Where do you let go? This could go on and on? Commissioners need you to produce the research and not spend your time implementing it. Needs to be sustainable. Are you trying to work out your role? Who? Is there another level in the pathway in order to make evidence feel real to us as researchers? It's about doing research on the implementation. Are you going to be interfacing with clinicians and patients? Do you use role and credibility to drive change locally and utilise skills of academics and clinical knowledge? How much to commit? Requires funding and a lot of resources. Local adoption easier but nationally/internationally think about what you are trying to achieve? Focus.

Economic climate – ccg – what are the hooks, do they align, what outcomes do people want? How can influence ccg? Funding and resources go hand in hand with ccg. What is the motivation and the key trigger point – reduce referral to ortho – can that sustain funding? variety – different hooks, part of your skill as an influencer is to get the right hook. Meet the ccg needs.

Historical climate of times changing is a strong theme. For example, to previous expectation that researchers worked in isolation and then it was up

to clinicians whether they chose to implement or not. Then, the notion and understanding came that it takes an average of 17 years to get research in to practice and so implementation science was born and KM central to this.

01 provided an example of when the EC was aligned however the projects was deemed less successful (self-referral to physio)– if all EC is right, national body, government backing, audits etc., not rolled out to 50% ccg. Strong external story but this isn't enough in some cases – can get national buy in from policy and bodies but doesn't change word on the street.

04 - How damaging is 1 view – only need 1 person to rubbish it, patients/GP/friend very influential, powerful negative paradigm. Courage, being brave to mandate it, make the change, take step forwards, nobody wants to take it – who's role is it? Implies bravery to implement good quality evidence.

Which benefits are more important? To whom?

Has to be easy, straightforward, the right way, accessible, got to just work for the system.

Organisation

ZP - Where does organisation fit in primary care, practice or ccg, who are these people. Group discussion on who's role is it, do you do research and then implement it? Is there a problem with academics engaging in KM? Confusing? Need mature relationship. Current. If you want to engage needs to be right level and timing. Engagement – complex. 01 – it goes back to the

evidence and research, in my head it is not as relevant as what we do with it for EC.

Discussion returns to language and marketing. Working in partnership. Language between academia and ccgs and multiple organisations, clinicians with ccg and clinician and academia. Understand their context and language and be able to move it forward quicker you get credibility to do that when you are embedded in those processes. 06 mentioned Startback fatigue – are people bored of hearing me go on about this? 03 – where is the promoting implementation boundary? If you take process so far, then is it not within our role to mandate things – do NHS have to take over? Get foot in the door, language, flexibility to be able to communicate, breadth of language, financial, 18-week pathway, treatment to target for ccg whereas for patients use outcomes/benefits (language). Transform and decant research language into coffee table publication, not statistics for patients. Target to audience in meaningful way. Credible boundary spanners in the middle to do legwork and promote, then is it just random implementation – good experience carry on, not heard of it don't do it? Momentum is a real challenge.

06 – research language is too dense, needs to be 'it will save me x £'.

04 – is it about competition between researchers? 06 – key driver for researchers REF and impact (discussion about climate change for academia and KM). MS – so are researchers like sales reps? 06 – need a range of people within an implementation team (IAU – climate change)

Only so much time and resources from clinical/ccg

Are researchers like sales reps? Benefit of implementation team – range of people. Who is setting KM agenda? Who sets priorities for mobilising/transforming knowledge? Sometimes set at context level – if you implement nice then you are enhancing care, neutral territory.

Note from professional on framework –

03 - Commissioners should be in the professional section of framework, and funders, EIT etc., you have got to have funding throughout, it's the future. ZP – are we saying that patients and money needs to be integral at every level? Group agreed.

Intervention

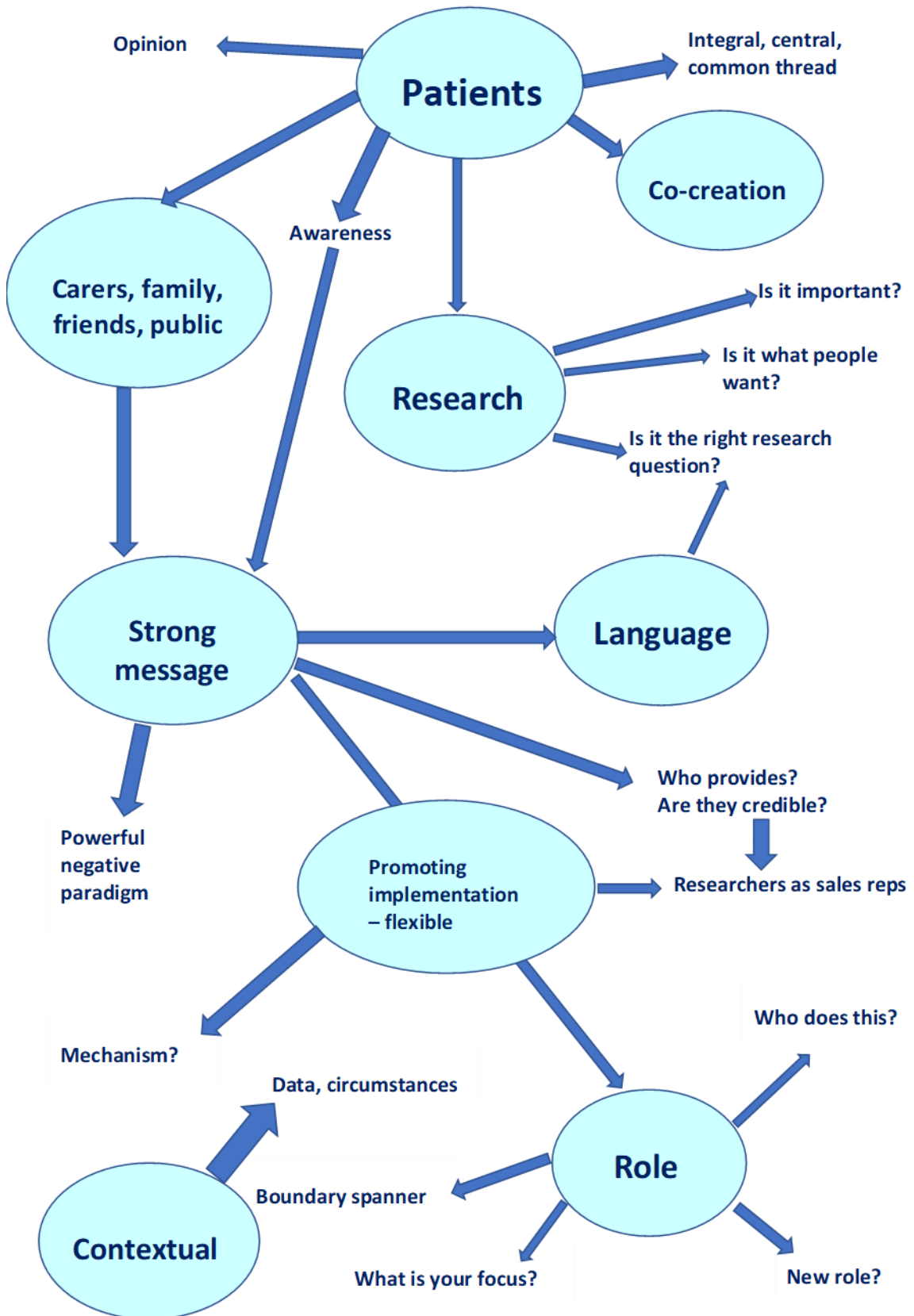
To embed in real world it has to fit in the real world so all implementation inevitably results in the intervention adapting and changing to fit with local context. Back to toaster analogy.

04 – it has to be easy. Something they can access.

08 – the reason we felt JIGSAW was successful was that we didn't try to make 'the toaster' work and tell practices what to do, we said 'you make the model fit where you work' (FG data) and shared the innovation information and got the team to work for their context.

Implementation – people collect the right data so people see the benefit or not of when implemented in their context, data collection process within implementation process. Can research be lifted and dropped?

Appendix 4 Mind map created following stakeholder advisory groups



Appendix 5: Systematic review search terms

Table 22 Search terms used for the systematic review (appendix 5)

Criteria	Search terms used
Osteoarthritis	Osteoarthr*.mp Osteoarthritis, ((knee* or hip or joint* or hand*) adj2 pain*) OA.ti,ab (degenerative adj (arthritis or joint or joints)).ti.ab.
Guidelines/EBP	"Research to practice".mp Practice guideline/ Guideline Adherence/ Guideline*.mp Recommendation*.mp Evidence-based Medicine/ or Evidence based.mp Evidence-Based Practice/ or Health Plan Implementation/ (best practice* or wise practice*)
Implementation	Implement*.mp Barrier*.mp Enabl*.mp Facilitat*.mp Impede.mp Integrat*.mp Obstacle*.mp Caus*.mp Comply or compli*.mp Utili*.mp Disseminat*.mp Adopt*.mp Accept*.mp Feasib*.mp Normali*.mp "diffusion of innovation"/ Diffusion.mp Promot*.mp Adher*.mp Resist*.mp Evaluat*.mp Translational Medical Research/ "knowledge to action".mp Integrat*.mp ("diffusion of innovation" or "implementation of existing research knowledge"). (link* or exchange).mp (impact* or change*).mp (appli* or apply or broker or coordinate* or "know do gap" or mobili* or synthesis or transfer or translat* or uptake or user* or practice).mp. "Process Assessment".mp
Primary care	Primary health care/ "Primary care"

	<p>Primary adj2 care family practi*.mp GP* "general practi*".mp "family physician*".mp. family medicine.mp family doctor.mp General practice/ Primary Care Nursing/ or Nurse Practitioners/</p>
Qualitative	<p>Qualitative.mp or Qualitative Research/ Observation*.mp Focus group*.mp Case stud*.mp Experienc*.mp (Theme* or thematic).mp Realist synthesis.mp "Attitude of Health Personnel".mp Decision mak*.mp Interview*.mp or interview/ Cross-sectional.mp Survey.mp Questionnaire*.mp Narrative.mp grounded theory.mp or Grounded Theory/ View*.mp Belief*.mp (Health Knowledge or Attitudes or Practice/ attitude*).mp</p>

Enhancing the quality of care for adults (aged 45 years and over) with osteoarthritis (OA): A knowledge mobilisation case study and recommendations for primary care

Individual Interview

Participant Information Sheet

(Version 1.0 15-Mar-17)

Invitation

You are being invited to participate in an individual interview as part of a research study about the transfer of research knowledge in primary care. We would like to find out more about the uptake of an enhanced pathway for osteoarthritis care from *either* a research study (known as MOSAICS) *or* an implementation project (known as JIGSAW), which you may have heard of. Before you decide if you wish to take part, it is important for you to understand why this research is being done and what it will involve. Please take time to read this information carefully and discuss this with others if you wish.

Thank you for taking the time to read the information below. Please ask us if there is anything that is unclear or if you would like more information.

Aims of the study

We are seeking your views and experiences on the process of transferring research knowledge in to practice, using the example of an enhanced pathway for osteoarthritis care. We would like to better understand your involvement (even if this is minimal) with either the MOSAICS and/or JIGSAW projects.

Why have I been invited?

You have been selected because your practice has been involved in either the MOSAICS or JIGSAW projects in some way. Your views are very important and they will help both researchers and primary care practices to know the best ways of using research findings in the future.

What will the study mean for me?

We are inviting you to participate in one interview, which will last no longer than 60 minutes. The researcher will ask you about your experience of implementing an enhanced pathway for osteoarthritis care, what you think about using research knowledge in practice and what potential challenges your practice may face. The researcher may ask you questions which arise from the discussion. Everything you say will be treated with strict confidentiality. You do not have to answer any question that you do not want to and should say anything that you are not comfortable discussing.

The interview will help us to understand your experiences of using research findings in practice and give us an insight into the views of those involved in the process in primary care.

What will the results of the study be used for?

The results of the interviews will be used to provide evidence for a case study which will inform the development of recommendations for using research findings in primary care.

We intend to disseminate the results of the study through publication and presentation at conferences. You will not be identified in any report or publication; quotations may be used in reports of the study but your identity or that of any third party will not be disclosed in any such report.

We can send you a copy of the study results on request.

If I would like to take part, what do I have to do?

If you are interested in taking part in the research we would like you to complete the enclosed reply slip and consent form and return them to us in the pre-paid envelop or respond directly via email to

l.marshall@keele.ac.uk. We will then contact you to answer any questions you may have and arrange either a face-to-face interview (at your place of work) or interview over the telephone. This will be arranged at your convenience. We are interested in your views and as such there are no right or wrong answers. No preparation for the interview is necessary.

What are the possible benefits (if any) of taking part?

The findings of this study will be used to understand the what individuals who work in primary care think are the barriers and enablers to using research findings in primary care. Findings of the study will have no direct benefit to you, but may have future benefit for researchers in implementation in primary care.

What are the risks (if any) of taking part?

There are no risks (in terms of safety or physical harm) involved in participating in an interview. There will be a need to commit no more than 1 hour to participate in this research. Remuneration will be offered for your time.

How will information about me be used?

Everything you say in the interview will be treated within the strictest confidence and used only for this research. We would like to audio record the interview. The interview will then be transcribed with all information anonymised using unique numerical identifiers. Whilst quotations from the interviews may be used in reports, your identity, and that of your practice, will be removed and the data will be fully anonymised. Your participation in the study will not be disclosed to anyone outside of the research team.

The audio recordings and transcripts will be stored securely, with access restricted to authorised researchers, until a minimum of 5 years after the end of the study. After this time it will be destroyed.

The interview recording will be typed out. The paper transcript will not contain any information that would identify you. On this basis, the anonymised data will be kept and may be used in other research studies. All electronic data will be stored indefinitely in keeping with the Research Institute's Standard Operating Procedure for the archiving and destruction of data.

If you agree, quotations from the focus group may be used in reports but you will not be identifiable from these quotes. Any personal details

(name, address, and any personal information) will not be included in any such report.

Do I have to take part?

No. **Your involvement is entirely voluntary.** You are free to decide whether you wish to take part or not. If you do decide to take part you will be asked to sign a consent form and you will be given a copy to keep. **You are free to withdraw at any time during the interview and without giving reasons.** If you withdraw within two weeks of the interview you can withdraw your agreement for quotations to be used in reports of the study, by contacting the researcher and we will delete the transcript and audio file. It is important to note that after this time it will not be possible to delete any files as we will have already begun to use the information, in line with your consent.

Who will have access to information about me?

Both the electronic and the paper copy of the interview will be kept in a secure location and will be accessed by researchers directly concerned with this study. If you provide consent to do so, the information contained in the transcript may be re-used by other researchers in the future. Neither the recording nor the paper copy will bear any information that would identify you by name.

What if there is a problem?

If you have a concern about any aspect of this study, you may wish to speak to the researcher who will do their best to answer your questions. You should contact Laura Marshall or Professor Krysia Dziejdzic on 01782 734889, or k.s.dziejdzic@keele.ac.uk.

Alternatively, if you do not wish to contact the researcher you may contact Nicola Leighton on 01782 733306 or n.leighton@keele.ac.uk.

If you remain unhappy about the research and/or wish to raise a complaint about any aspect of the way that you have been approached or treated during the course of the study please write to Nicola Leighton, the University's contact for complaints regarding research, at the following address:-

Nicola Leighton
Research Governance Officer
IC2

Keele University
ST5 5NH
E-mail: n.leighton@keele.ac.uk
Tel: 01782 733306

Contact for further information about the study?

If you have any questions or would like further information about this study, please contact **Laura Marshall** on **01782 734889** or email l.marshall@keele.ac.uk

Thank you for taking the time to read this Participant Information Sheet.



CONSENT FORM (for use of quotes)

Title of Project: Enhancing the quality of care for adults (aged 45 years and over) with osteoarthritis (OA): A knowledge mobilisation case study and recommendations for primary care

Name and contact details of researcher: Laura Marshall
Research Institute for Primary Care and Health Sciences,
Keele University, Staffordshire, ST5 5BG
01782 733889 or l.marshall@keele.ac.uk

Please initial the box if you agree with the statement

1. I agree for my quotes to be used
2. I do not agree for my quotes to be used

Please complete in BLOCK CAPITALS:

Participant

Name

Date

Signature

Researcher (Name of person taking consent):

Name

Date

Signature

Interview Consent Form

Title of Project:

Enhancing quality of care (for adults aged 45 years and older) with osteoarthritis (OA): a knowledge mobilisation case study and recommendations for primary care

Name and contact details of researcher:

Laura Marshall

Research Institute for Primary Care and Health Sciences,
Keele University, Staffordshire, ST5 5BG
01782 734889 or l.marshall@keele.ac.uk

Please
initial

- 1 I confirm that I have read and understand the Interview Participant Information Sheet v1.0 dated 11.10.16 and have had the opportunity to ask questions.
- 2 I understand that my participation is **voluntary**, that I can refuse to answer any given question, and/or withdraw my consent at any time without giving a reason. If I withdraw more than two weeks after the interview it will not be possible to delete the transcript as analysis will have commenced.
- 3 I understand that the interview will be digitally recorded and transcribed, and that the recordings will be securely stored in the Research Institute for Primary Care and Health Sciences at Keele University. Transcripts will bear no personal identifying information.
- 4 I understand that audio recordings and electronic transcripts will be stored for a minimum of 5 years and archived securely and may be re-used by researchers from the Research Institute for Primary Care and Health Sciences or other affiliated research centres in the future.
- 5 I understand that quotations from the interviews may be used in reports and/or publications, but that this data will be anonymised such that I cannot be identified.
- 6 I agree to take part in the above study.

Appendix 8: Original focus group topic guide

How might the (control practice) training package prompt and enable changes in practice with the aim of enhancing care for patients with OA?

To what extent does the facilitated group discussion itself contribute to thinking about changes in practice? (nb interactional analysis may help answer this)

Scene setting

Topic guide (with possible prompts in italics)

1. To what extent do you believe care for patients with OA in general needs enhancing?

How does OA care match up to other chronic disease models in primary care

2. What thoughts / ideas have you had about enhancing OA care?

3. What changes in practice could realistically be achieved to enhance care for OA in your practice?

How would the proposed change fit into the chronic disease model/

fit into existing models of care in the context of multi-morbidity

Barriers/facilitators to change

If no change – what are the downsides to this?

What would you need (to happen) to facilitate this change?

How would you judge the success of this? (what if any outcomes could be measured)

Did the training help equip you for the change you are describing

if yes, what aspects of the training helped equip you for this change?

What training needs might still remain and need addressing?

4. What next? Are there any concrete actions planned as a result of the training/ discussion today?

Appendix 9: Interview topic guide

For the processes of ethical review, the topics that I anticipated discussing during the interviews are outlined below.

Interview: Topic Guide

Enhancing the quality of care for adults (aged 45 years and over) with osteoarthritis (OA): A knowledge mobilisation case study and recommendations for primary care

Checklist:

- Digital recorder/microphones/batteries
- Clock
- Informed consent

Introduction:

- Before we start I would like to thank you for your interest and for taking the time to speak to me. As it says in the information sheet, the research study is exploring your views and experiences of the transfer of research findings into healthcare practice, using the example of an enhanced pathway for osteoarthritis care (from either the MOSAICS research study or JIGSAW implementation project which you may have heard of). I hope that you can help by telling me about your experience and views of this process.
- I have a few questions to ask you and the purpose of this study is to explore the views of general practitioners and other key individuals

regarding the process of knowledge mobilisation in the context of these two projects.

- The interview will last no longer than 60 minutes and will help us understand your experiences of knowledge mobilisation and give us an insight into the views of those on the frontline of primary care.
- This is an informal discussion and I would like to repeat that all the information that you provide will be treated in the strictest confidence and used only for the purpose of research.
- Do you have any questions? Before we proceed, please may I take you through the consent form confirming your agreement to participate in this study?

Topic Guide

NB this will be informed by the secondary data analysis but is likely to include questions on the following themes;

- Participant details
- Knowledge mobilisation and the evidence to practice gap
- Literature specific – recommendations
- Project specific – MOSAICS and JIGSAW
- Do you have anything to add?

Thank you ...

In light of extensive literature reviews, a stakeholder advisory group, analysis of existing focus group data and PPIE, the topics were progressively refined and refocussed. This reflects the emergent process using an abductive research strategy whereby theory emerges from the data at each progressive stage and the topic guide is refined to reflect this.

Example of a topic guide for a clinical participant.

Can you start by telling me a bit about (this process) your involvement (as a practice) with either MOSAICS or JIGSAW?

What motivated you to get involved?

Were there any aspects that you were more reserved/concerned about?

What features within the practice influenced implementation?

Why do you think that was?

What is it that motivates your practice to implement things like this? £, patient care?

What did the training do? Allow headspace, discussion, reduce hierarchy? Group decisions, transformation?

Have you encountered any barriers?

What is stopping other practices taking this up?

What's happening now?

Is it still going? Has it changed? Why?

Has it been monitored? Evaluated?

Have you shared learning with others? CQC?

Who/what are facilitators to this?

Who are the key people involved with driving forwards implementation within your practice? why? What is it about leadership within the practice?

Can you suggest anyone else who would be beneficial for me to talk to about the process?

How do you or your practice find out about new ideas or projects, and how do you decide whether to implement them?

What forums or mechanisms do you have to communicate ideas for change? (someone else I've interviewed mentioned whatsapp)

Whose responsibility do you think it is to flag ideas for change and then drive those forwards?

What strategies do you use in practice to make changes/Implement new ideas?

Other examples? have you made any changes like this for other conditions?

What was similar/different?

What role do patients play in changing practice and implementation?

How were patients involved in this example?

How do you think this could be improved locally and nationally?

Appendix 10: Coding framework

Coding framework

Final categories and codes in thematic analysis

(for interpretation with OSOP)

Category summary	Codes included
Push factors: factors that facilitated the 'push' of evidence from the research study team to each general practice	
Nature of the training: examples of the structure, context and execution of the training sessions	Whole practice approach, holistic, cohesive message, shared concept, Feedback and reflection, learning from others, reinforced messages, group think
Nature of the intervention: examples of the features of the MOAC intervention	Benefits other conditions, ease of implementability, 'fit' with existing systems, opportunistic,
Pull factors: factors that facilitated the receptiveness or 'pull' from each general practice organisation to utilise and adopt the knowledge in clinical practice	
External context: reference to factors outside of the organisation that have could impact on the decision making of each general practice (directly or indirectly)	Perceptions of OA, alignment to healthcare policies, financial landscape, shift in perceptions, positive message, reduce consultations with surgeons,
Organisational factors: all reference to the organisation and it's mechanisms	Systems capability, capacity, collaborative working, philosophy of care, culture, hierarchy,
Role of the professional: instance of professionals within each general practice who take the role of influence to drive forwards and how they perceive their role within the process	Inter-professional relationships, enthusiasm/motivation, reconceptualization of roles,
Role of the patient: features that involve or influence patient centeredness, choice or needs.	Complex patient, role in implementation, patient benefits, patient feedback

Appendix 11: Triangulation key finding statements with quotes

Key findings from three datasets

Focus group

Key findings	Sample quote
<p>Key determinants of implementation</p> <p>a) Whole practice approach to training</p>	
<p>1.1. HCPs valued protected, dedicated time for whole practice CPD/discussion and reported how it ensured consistent messages were delivered by all staff</p>	<p><i>It's changed our way of practice for the better</i></p> <p><i>I think the importance of the training for me...is that we have the same shared concept of what we're doing</i></p>
<p>b) Opportunity for reflection and feedback</p>	
<p>1.2. HCPs reported how valuing the space and time/opportunities for feedback and reflection (both individually and as a practice). This facilitated a change in their practice and enabled problem solving for implementation by enabling local contextual factors to be considered</p>	<p><i>It's made me think much more carefully about the way I deal with arthritis in practice</i></p> <p><i>It's just thinking about how we're going to do it</i></p> <p><i>Well, the whole project has brought us together on a number of occasions. Protected time, you know, great guys coming in to talk to us. We've all had a lot of fun, and I</i></p>

	<p><i>think we've all really enjoyed it. And then you learn, and you take stuff away.... so the whole things been great. But often one of us will learn something and then, keep it to yourself and you don't actually get to, to talk to your partners about it. So as you all do it at the same time it's, kind of, unique really, isn't it ? We don't do that very often.</i></p> <p><i>We've reviewed our referrals haven't we in that subject area, because it's one of the highest referral activities in (county)</i></p> <p><i>We were highlighting - it was one of the areas we highlighted as having, erm, high referral rates in, was orthopaedics, and so that we picked that one out.</i></p> <p><i>We've got two HCAs who - I don't know whether they've got any time</i></p>
<p>1.3. HCPs reported how support and training in consultation skills facilitated a change in their practice</p>	<p><i>They showed us how to get around these blocking signals that the patients send out, and that's been really useful because I've used it in other respects as well</i></p> <p><i>I, kind of, maybe think twice about how I'm explaining it. The way the - I mean the role-play, particularly, with me was quite powerful.</i></p>
<p>1.4. HCPs reported engagement with implementation because of positive experiences in delivering the intervention</p>	<p><i>I've had a couple that have come back to me and said, 'Well, actually, the pain isn't as bad as I thought it was going to be.' And, you know, it's encouraged them to carry on and, and carry on with the exercises. They are walking</i></p>

	<i>longer distances. So, they are building up their knee strength and noticing that it isn't as painful</i>
c) Shift in perceptions	
1.5. Identifying opportunities to enhance quality care and providing the knowledge and skills to do this facilitated implementation (provide something better than what was happening already)	<i>I think I'm suggesting it more, probably, because of the need to do, to do more. I think, I think the patients that have improved, that, that my – no, I think my care to the patient – it's, it's the patient who, who don't need to go onto, to, to surgery and, and perhaps need to have extra stuff - it's - I think, I think the patients who have just got a bit of arthritis which is playing up at the moment, those are the ones, I think, that should benefit most from my training in this, because I think I, I've got more to offer those people.</i>
1.6. HCPs engagement in implementation of the intervention was influenced by their perceptions of OA and its management	<i>It is a very different approach, isn't it, to the, 'You've got a sore knee. That's - ask for an orthopaedic opinion,' which is the surgical model. And the training has been very much a primary care management model, which is much more appropriate, and I think that's been very helpful</i>
1.7. HCPs reported valuing a comprehensive understanding of the evidence-base (provided in the training)	<i>And the whole narrative of the surgeon, to me it seemed to be that there's a different potential and a different narrative now. And, and that's endorsed by the research we've been given. It just seems a better approach all round.</i> <i>What I hadn't got was the knowledge that what I was saying was actually evidenced based. And a lot of mine</i>

	<p><i>was just optimism, you know, 'Go and do it because the surgeon's not going to do anything anyway for a bit, so you might as well enjoy your knee and look after it.' But actually that seems to be the right thing to have been saying. That that was a big endorsement. I found it very helpful.[FG]</i></p> <p><i>The stuff from (AI) gave us permission and for me it validated - I, I found that the research, the, the graphs there were put up that showed I think Scandinavian research looking at... And, and that's endorsed by the research we've been given</i></p>
<p>d) The 'fit' of the intervention with existing systems</p>	
<p>1.8. Flexible interventions were seen to facilitate implementation as local contextual factors including a multi-disciplinary approach as well as systems and processes could be accommodated</p>	<p><i>We've got a new secretary coming...one of the two secretaries is a lady who has done ... some sort of fitness programme or something like that... So, there are quite a lot of people are interested</i></p> <p><i>"We find that if you're doing a diabetic review, it's better to fit it into that...we're seeing those patients anyway"</i></p>
<p>1.9. PNs and HCPs valued the opportunity to expand their role to implement and deliver the intervention because it was seen to enhance their professional autonomy by enabling them to manage patients with joint pain without referring patients back to the GP</p>	<p><i>Yes, erm when we talk to patients about lifestyle changes and they, and they say, 'Oh, well I can't do that. I've got, you know, a dodgy knee or something,' I can say, 'Ah, now right.' Put the chair and show them the exercises. [okay] Then erm do the recovery of [02:54] voices ...</i></p>

	<p><i>Yeah, tend to give them that and then ask them to come back and ...</i></p> <p><i>Yeah, and then ask them to come back and come and see me.</i></p> <p><i>I think the explanation, the time, [yes] the fact they can sort of come back, back and see us.....</i></p> <p><i>... and, you know, sort of progression and hopefully see an improvement, knowing that somebody was there to help, you know. We'd got the time to do that and make a difference.</i></p> <p><i>It's something to try, and then if it doesn't try, then go back and see the doctor</i></p>
<p>1.10. The reduction in workload for GPs was a motivating factor for implementation. HCPs did not want to implement an intervention that would increase their workload</p>	<p>One participant appeared to be daunted by the prospect and potential scale of implementing the intervention. This was mainly due to the size of the problem associated with OA which was described as having the ability to <i>totally swamp the system</i>.</p> <p><i>Because we would do it better doesn't mean to say we're gonna get that much more of it</i></p>
<p>1.11. Evaluation in research/trial conditions</p>	<p>No supporting data therefore removed</p>

<p>1.12. A reported strength was that the intervention was not role specific</p>	<p><i>It need not be the GP that then takes that forward, I suppose, with trained nurses or train somebody else...access to physio</i></p>
<p>1.13. Implementation was perceived as not onerous because it required minimal system level change (structural change, time of consultations, extra clinics, opportunistic)</p>	<p><i>I think I could add something onto weight monitoring, then, couldn't I? And there's a lot more people coming along to this weight monitoring, so that's one way of getting to people.</i></p>
<p>1.14. HCPs reported valuing the simple, uncomplicated nature of the intervention and the support provided by the research team in guiding implementation (including technical issues with template/installing, providing guidebooks, training)</p>	<p><i>The best thing is to actually look at the basics first of all, and, and actually look at, in practice care. Make sure that you've got, erm, you know, er, good available information for patients, which is fantastic what we've been given</i></p> <p><i>It's not rocket science</i></p>
<p>e) The alignment of the intervention with current policy</p>	
<p>1.15. Alignment of interventions with current policy facilitated implementation</p>	<p><i>If people can take ownership of how to improve a problem themselves, it's the way we should be going</i></p>
<p>1.16. HCPs (mainly nurses?) reported engagement with implementation of an intervention that aligned with holistic care</p>	<p><i>I think it was, was very good because it, sort of, was, everything, it was quite holistic, I think, was one of the things And they, sort of, focused quite a lot on non-medical treatments for osteoarthritis, which is something that we probably wouldn't necessarily think of with the importance of the exercise, particularly. And then, also, when talking</i></p>

	<p><i>about medicines, about using more topical, erm, preparations more than...</i></p>
<p>1.17. HCPs valued an intervention that enhanced patient self-management because this aligned with their model of treating/benefitting other LTCs</p>	<p><i>It's useful - it actually gives you ways of approaching other things, you know, it's not only - doesn't only help the patient with osteoarthritis, but it may well help patients with all sorts of chronic diseases, and how important that is in general practice?</i></p> <p><i>Yes, erm when we talk to patients about lifestyle changes and they, and they say, 'Oh, well I can't do that. I've got, you know, a dodgy knee or something,' I can say, 'Ah, now right.' Put the chair and show them the exercises</i></p>
<p>1.18. HCPs reported how the training increased their skills and confidence in managing patients with other LTCs as the skills learnt were transferrable to other areas.</p> <p>knowledge</p>	<p><i>it's, sort of, given me more confidence [laughs] that it's a reasonable way of going on, not least of all because we all talked about it, er, you know, which we hadn't done before.</i></p> <p><i>having had the training, you can actually give a more positive action to take</i></p> <p><i>so that for me has changed the way I look at it, in terms of weight management and exercise in particular. So, it's a prompt, if you like [hmm]. It's, er, it's permission to ask the question [laughs] of the patient, if you like.</i></p> <p><i>Erm, and also because I'm convinced now, having pushed a few patients to lose weight, that their symptoms, despite their arthritis, can vanish...</i></p> <p><i>It's, it's erm perhaps erm put into context what I've probably been doing a little bit of already, but giving me</i></p>

	<p><i>more permission to do it and be a bit more erm I suppose confident [huh-huh] in doing that and not baling out to get X-rays and you can do physiotherapy referrals, which would erm - err would be useful in some cases, which erm, which erm allowing the patients to manage their condition a bit more themselves and, and expect them to err - so, so yes, it has changed. It's changed our way of practice for the better.</i></p>
<p>General practice transformation</p>	
<p>1.19. Several different/a range of types of knowledge are given priority to by stakeholders (research evidence, guidelines, tacit knowledge, case stories)</p>	<p><i>and from the NICE guidance which I'm ashamed to say I haven't looked at [FG]</i></p> <p><i>(Specific clinics)...they don't, they don't work. We had big gaps, people...DNA...its just too restrictive [FG]</i></p> <p><i>And that's endorsed by the research we've been given</i></p> <p><i>I mean the exercise bit because, obviously, I've given it to a lot of patients, because, obviously, now I'm comfortable, because I've obviously been and done, and done the training, I'm comfortable showing them and giving them the literature. And they're coming back a month later, or whatever, for, with, with their other problems, and they have found the exercises to, er, to have been helpful, and people are more mobile and they're getting out more and, and doing more exercise [right] and being able to, you know, do more things [yeah]. And obviously taking the analgesia, because, obviously, you know, they weren't,</i></p>

	<i>they weren't taking adequate, sort of, paracetamol. They were taking it just, you know, if they wanted to just go out for a walk up the, up the shops, whereas now they, you know, they're taking it onboard that they need to take it, you know, regularly and they're doing it, and people have been more active haven't they? [FG]</i>
1.20. In practice culture can affect implementation both positively and negatively (hierarchy)	No quote directly saying this but discussion implies
1.21. In some practices, practice nurses were central in driving forwards implementation (decision making)	<p><i>Well I suppose we'd, we'd have to have, the knowledge that one of the team, the nursing team, there's four in our nursing team, really, would be happy, prepared, trained to do that, which hopefully they are now, or are becoming, with osteoarthritis. Erm, and then, er, with that knowledge, you know, we can just refer them. [FG]</i></p> <p><i>Well, I feel like I can manage. I feel happy to take in onboard [FG]</i></p> <p><i>We do get really enthusiastic, don't we about it? [FG]</i></p> <p><i>They're great motivators this team. They're all, they're all, they're all fantastic. [FG]</i></p>
1.22. Dedicated time for a whole practice approach for implementation planning was useful	<i>We've got, now got two nurses who have had extra training, so we need to make use of that resource. Erm, and, erm, you know, ideally, if we had better access to a physiotherapist as well, within the practice, I think that would be good... [FG]</i>

	<i>So we haven't got together, apart from in the meetings that we've had with them as a team. [FG]</i>
1.23. The desire/drive towards quality improvement influenced engagement of HCPs with implementation ? personal interest	<i>My concern is that the individual has to have the enthusiasm and the passion for the subject and then, so if somebody's really interested in taking this forward, then it's really gonna work. And if it just becomes another thing that everyone's got to do, it isn't gonna work [FG]</i>
1.24. Patient preferences influenced implementation	<i>I think there's a lot of patients out there with osteoarthritis and they've got, erm, differing ideas about what it means to them and how it affects them, and different ways of dealing with, different joints, different severities, different impacts on their life [hmm]. There's not, it's not always [hmm]...So often you see people who have got quite severe arthritis and they don't want the, they don't want the surgery [hmm], but you need the time in the consultation [hmm]. We need the time to pass them onto somebody else who has the time to then. Erm patients very often I think have slightly different expectations because. 'So and so's had a knee replacement. So and so's been referred off for this X-ray or that scan.' [hmm] And I think that that, that model exists both in public perception and in practice</i>
1.25. General practitioners identified how implementation may affect a range of other conditions/patient groups	<i>It's difficult to put it in proportion, I think. You can always improve people's care, but you can't do it endlessly</i>

	<i>because you've got, you've got other things to, you know, it's general practice not, not, er not target practice</i>
1.26. Implementation of interventions for OA were often seen as low priority	<i>So I think, yeah, it's, it's put on the back burner by both parts, the health professionals and the patient himself accept it's [yeah] part of ageing [hmm] [02:57]. But, er, in addition there's not – compared to other chronic conditions, there's not a lot of other services.</i>

Interviews

Key finding	Sample quote
External context	
a) Restricted resource and capacity	
2.1. Implementation could only be considered if no additional resource was needed	<i>And the third (recommendation for implementation) is a huge dose of realism in terms of, you know if it's in primary care you've got to either fund it or create the funded time for them. Er, and if you're putting something in you've got</i>

	<i>to take something out because they just don't have the capacity.</i>
<p>2.2. HCPs reported the inability to be proactive towards implementation due to immense pressure faced working in primary care meaning that there is not enough time to plan</p> <p>Clinicians described a need for head space to enable time to stop and think about the evidence base to ensure the best services are being provided.</p>	<i>It's time restraints to be honest cos you tend to be more reactive at the moment rather than pro-active. We were only just saying the other day we, you tick along you know and you manage, and it would be really nice to be able to be more pro-active.</i>
<p>2.3. Some participants reported how funding helped to facilitate implementation by providing an incentive for engagement</p>	<p><i>make life easier</i></p> <p><i>they weren't having to pay for me from that point of view they had to provide the room but it was an easier sell that way as well that might be a harder sell if you then had to say well actually this is going to be cost-effective because, dah, dah, dah, dah, dah... [yeah, yeah] but I think making a cost-effectiveness argument as well as a care quality argument is important</i></p>
<p>2.4. Several participants reported how funding did not facilitate implementation because this did not address issues with capacity/ recruitment of staff</p>	<p><i>The climate is changing. People are more and more reluctant to put their hands in their own pockets to, to fund a service that's not attracting any funding</i></p> <p><i>I don't think money is the key to it, throwing money at things, it is all under-funded but it's... the funding in general practice is far, far more complicated than that, it's big money, it's the fact that there's been underinvestment</i></p>

	<p><i>in general practice for a long, long time...so it's big money and it's politics, there's been far greater investment in secondary care than in primary care and yet there's been far more growth in expectation of primary care</i></p> <p><i>What we (implementers) got loud and clear from them (GPs) was 'we don't believe that any funding will follow, we need some money upfront if we are going to do this, there's a cost to the practice, there's GP time and there's nurse time and we are all highly stretched and this is another example of moving secondary care into primary care and we will just mop it up'</i></p> <p><i>You can't recruit to general practice so there are lots of vacancies but there still isn't enough money in the system to fund enough people to come into it</i></p> <p><i>The GPs are saying 'but you know if I'm already working to capacity, what do I want more money for? you know, I can't I can't generate the free time to do it', so I think time and some sort of back up resource is more important</i></p>
<p>2.5. Participants reported how the staffing model of a general practice influenced implementation. This was due to staff turnover making implementation challenging</p>	<p><i>If there's a turnover of new doctors every six or 12 months, some people just, well they only locum in practices as well then you are really not going to have any lasting impact from training, whereas in a partnership I think you've got a far greater chance</i></p>
<p>2.6. Implementation was suggested by participants to have the potential to disrupt equipoise within a practice because doing more for one condition or group of patients was</p>	<p><i>It's a big problem and the more you have to do, the less you have time to do other things and if it's fire-fighting at the front door because you've got so many ill people or people who believe themselves to be ill coming through</i></p>

<p>perceived to have the potential to detrimentally affect others</p>	<p><i>the door, then you need to be doing something about it and that does restrict what you can do elsewhere</i></p> <p><i>If you're putting something in you've got to take something out because they just don't have the capacity</i></p>
<p>2.7. The notion of change fatigue was perceived to influence implementation by disengaging HCPs who are working under immense pressure and do not feel able to implement new interventions</p>	<p><i>You know, in fairness to my colleagues who are in the city particularly, you know, general practice is really, really struggling. Erm, struggling to recruit, overstretched, you know, people cannot see the wood for the trees or raise their head above the parapet...and people get fatigued, you know, I completely get that</i></p>
<p>2.8. Participants report how implementation of an intervention that provides no financial savings is seen as a low priority to GPs and commissioners</p>	<p><i>Finance is at the top of it. It either has to be, er, cost neutral or cost saving or it has to have a really strong safety, er, element to it. Clearly this wasn't so if it's cost neutral straight away it's slipped down the pile in terms of people's priorities to deliver it. So, the driver really is financial in terms of, er, savings</i></p>
<p>2.9. Implementation was seen as 'bottom up' and driven by front line staff rather than being imposed from policy makers</p>	<p><i>I'm sure there are people, you know, high up in the NHS who think, 'Well, if only we could control all these people, we'll make this happen' but somehow, my experience is the opposite of that [mmm]. If you try and do that and then people will rail against it or they just come back to just burying their heads in the sand mentality [mmm]; 'Yeah, I'm being paid to do what I do. I'm going to do it [mmm]. Certainly not going to think of anything new or different'</i></p>

	<i>Patient quote</i>
b) Policy and the regulatory environment	
2.10. Policy and the regulatory environment affected implementation both positively and negatively for example QOF influenced practice staffs' views of what was a priority	<i>..that brought in so-called 'Quality and Out-, - Quality and Outcomes Framework' payments – QOF payments – which became a large focus for practices; again, for right or wrong but nonetheless, it made people do stuff to tick the boxes to get the pay that ran the practice. So you could sort of see why they had to do that and if you offered them something with no pay, then they would sort of question it. Erm, so I think the mindset had changed, perhaps; that it was very much target driven and payment driven So come up with a nice scheme and no – it's not part of the national sort of payment mechanism and why would you do that? which sounds mercenary but I mean it is – er, it's the environment that practices work in and Health Service encourages them to do that erm, but it – I think it does stifle innovation, no doubt</i>
2.11. The need to adhere with NICE guidance on its own was not a motivator, in the absence of other drivers	<i>One was around their understanding – their understanding that sounds somewhat patronising but, er, was their awareness of, er, the NICE standards for osteoarthritis. And they always have their, I would wholeheartedly say they have their patient's best interests at heart, but they weren't necessarily always up to date with the evidence and with the standards. And so, overcoming those issues so that they could make some better-informed choices, er, was difficult</i>

	<i>I think for a lot of them they sort of say, well it's a time factor, you know it's not top of the priority because it doesn't qualify for QOF and therefore because it's not on their plan of target hit list it's very much down the pecking order</i>
2.12. NICE guidelines could be turned to a motivator when coupled with CQC target	'When the CQC come in and say, "How do you know you do Best Care?" For OA, you'll be able to say, "This template complies with NICE guidance and we can run a report". You know, it's up to you'. So, we had a double whammy
2.13. HCPs reported valuing interventions that dealt with the problem of treating patients with multiple problems	We come across it all the time in our daily work and it's something that we can point people in the right direction for long term improvement of lifestyles really or for people to be able to do what they would like to be normally do as much as possible.
c) Service and system design	
2.14. Practices tend to work in isolation- interviewees speculated that working more collaboratively in small networks would facilitate implementation	<i>There's a culture of, literally of organisational barriers, in management, and people find it very hard, erm, to set out of silos and organisational silos</i> <i>It's a bit like – you know, as I – I always feel the NHS is too big to, to respond – well, evidently, it is too big to respond. You see that every day erm, whereas, in a smallish group er, of a practice or a number of small practices together, you can bring about change and that's</i>

	<i>to do with interpersonal relationships, and trust, and shared cultures, and common sort of beliefs, isn't it?</i>
2.15. Participants reported huge variation in the role of the practice nurse in primary care due to the nature of GPs being run as small businesses. Practice nurses were reported to work with differing levels of autonomy. This affected implementation both positively and negatively	<i>Practice nurses have been ignored as a group. They get paid different amounts at different practices, they're not agenda for change, they've no right to CPD, they are employees of a GP practice, so the variation in practice nurse engagement could be huge. We have some practice nurse who didn't engage at all through to others who absolutely drove it and loved it, like it was vocational for them. And you've got no leverage over that because the system has left them in a terrible place.</i>
d) Societal views on health	
2.16. Participants report how the biomedical model affects societal views on OA thus influencing engagement with implementation as it provided them with the skills to provide reassurance and positive messages to people with OA	<i>I still think we're banging our heads against a brick wall as well. There's still a massive culture out there that says, 'What you need is a new knee'. What you really need is to put the new knee at the very back of the list and do all the other things first. I mean why not lose two stone in weight if you've got two stone in weight to lose? It can be done and it's a lot safer than having an operation of any sort</i>
e) Accountability and the role of the patient	
2.17. Patient participation groups (PPGs) were perceived as powerful in driving change in primary care practices	<i>I think that patient groups are perhaps one of the most powerful resources, in terms of pushing change. I don't see it as coming from above and I'm, I'm reluctant to say it. I don't think I'd see it coming from the medical</i>

	<p><i>profession as much as it has done in the past or might have done. So, I think it needs to come from somewhere and really, the people with the most vested interests are the patients, - for understandable reasons and I think they'll drive the agenda more than anybody else</i></p>
<p>Internal organisational/ practice context</p> <p>a) A culture receptive to change and KM</p>	
<p>2.18. Participants report the culture within a general practice influences engagement with implementation (hierarchy, bully, relationships with external partners, communication)</p>	<p><i>And the other difference is erm, the nurses in the practice are not allowed any free thinking really, they're very controlled and they have to do what the practice manager says. Whereas in the other practice where, my friend works, they're more like nurse practitioners so they can decide what they do, how they treat people and that's the difference I think. Because if you can convince them that this is a good thing to do, it's common sense erm, it's good for the patient, it's good for you, then they'll remember, and they use it. But I mean, you see I've not even been allowed to really speak to the nurses at (practice), not very you know - not in a proper setting. I've talked to them at a practice meeting where all the GP's are there, but it's all been a bit [yeah] 'we don't say anything'. You know, they're a bit scared I can see, to say anything</i></p> <p><i>Well we've got a good management structure. We've got, erm, you know, people, a can-do sort of attitude really. Erm, we, we're probably, erm, early implementers, you know, in whatever we do.</i></p>

<p>2.19. A distributed leadership style was reported as being important in optimising implementation</p>	<p><i>He said, 'Well, I think the training here is the best thing that's ever happened erm, for my practice nurses. It's trained them in how to address other long-term conditions. All the messages about self-care and self-management for OA apply to hypertension, etcetera.</i></p> <p><i>I think Doctor (name) and the partners were quite happy for us to take a lead on setting up a system within the practices to suit our patients to fit in with our work load in that they just said don't make it dominant but we're happy for you to implement</i></p>
<p>2.20. Power dynamics in practices influenced uptake of implementation, with some examples where one individual could block or facilitate involvement</p>	<p><i>One of the GP's there, I won't name obviously, female that I know, is a bully and not very pleasant. And erm she was quite unpleasant and said 'oh, we won't be doing this' you know and it's – but you know, you're not paying us for it. And as I left the practice (name) came running after me and said 'I think this is fantastic, can I come and work with you at (AI)?'. So, it's either the practice manager or the GP's. If they're not interested or not engaged, then they rule the roost and this particular female GP did. And it's quite hard to get past that barrier.</i></p>
<p>b) Resource and capacity/ workforce structure</p>	
<p>2.21. Participants report how the staffing model of a general practice affected HCPs attitudes/engagement towards implementation and the extent to which staff has</p>	<p><i>It wasn't for money. It was for providing a better service but if you're not part of that fabric of the organisation, you're not going to be interested in that</i></p>

<p>a vested interest in practice performance influenced engagement</p>	<p><i>I'm most familiar with the partnership model, erm, because it's historical and I guess I feel most comfortable with that because you've got a bunch of people who are equals and are colleagues erm and although you might find it difficult to convince them, once you've got the body of people together, you know that they are all going to carry on thinking in the same way and that their management decisions, once they are joint, will be executed, erm, I think you always get refuseniks in a practice so you might think you've got everyone on board but actually there are one or two that don't want to do it but I think that's quite an easy model.</i></p> <p><i>I think one of the real difficulties with all employed people is that there's nobody actually managing it, clinically, erm, and... or if it's a couple of partners, executive partners plus half a dozen employed doctors they will often be part time they will often be transient, erm and they won't necessarily want to do anything that appears to be extra so you start having to mandate things and find ways of doing it, and the GP partners, I mean they can determine the overall direction of travel but they are not going to be micro-managing employed doctors so I think it becomes very, very much more difficult</i></p>
<p>2.22. Individual interest was reported to be a motivating factor for engaging with implementation</p>	<p><i>If you're ultimately responsible for your own destiny and your own pay, and your staff, and the welfare of your patients in a small population, I think you're going to be much more involved in designing that</i></p> <p><i>You are obviously special interest in muscular skeletal don't you [yeah]? Does that have a bearing on practices?</i></p>

	<p>IV: <i>Yeah, yeah definitely cos I'm enthusiastic about it [yeah]. So, erm if I had to go out and sell an idea about, I don't know, some diabetes or something that I knew nothing about, it'd be much harder.</i></p>
<p>c) Local considerations/context and practice population</p>	
<p>2.23. Characteristics and needs of a practices' local population influenced engagement with implementation</p>	<p><i>you need to know a bit about the practice. So, if you sent me out now into (area) to do Jigsaw in a practice I'd never been – well, I don't know any of the practices in (area). I would make some definite attempt to find out who worked there, what type of special services they offered, what that – their part of (area) was like, what types of patients were they likely to see erm, before I went in. And who – how many nurses they had, so do a bit of homework like that. Erm and I suppose – well, just find out about the practice really</i></p> <p><i>I mean the buy-in in (area), those practices are less-pressured than some of the urban (area) ones for example. It's just about the numbers of GPs, the numbers of patients, the relative deprivation and lack of deprivation so I think rural areas do have deprivation but the deprivation tends to be in terms of transport links, in terms of erm sort of facilities locally whereas the deprivation, urban deprivation, is about poverty, unemployment, nuclear families rather than extended families and so on, so the pressure's very different, so in a way we are working with the easier end, erm, you've also got older populations in the main out in rural areas so I think there have been enablers there</i></p>

<p>2.24. The range of agendas/priorities of stakeholders were reported to make implementation challenging</p>	<p>Is this repeated if not needs to be more specific</p> <p><i>It may not be on the highest priority for a manager, a manager may be interested in the existing service or making it more efficient or cost-saving or, or, getting rid of a waiting list, they may have their own specific targets that may not involve necessarily bringing in new evidence-based practise and that very much depends on the manager and the way they view evidence-based practise</i></p>
<p>d) The role of the patient</p>	
<p>2.25. Patient involvement was reported to be essential in achieving successful implementation in one practice</p>	<p><i>another really important thing because so far I've been talking about management and the clinician side of things, from a patient point of view, erm, it was really important to engage patients, they are a key stakeholder in the service, erm and also it's important to engage them to let them know that this new service is coming and for it to be successful, people need to know about it, they need to create a sort of an interest by asking their GP about it, asking their practice nurse, oh is this service going on? So we engaged and I went to another meeting with the [practice] Group, the PPG [ok] Patient and Public Group, and I was also involved with the [AI] Group, so, who are a group a PPIE group who help with implementing research into practise but also from a public engagement point of view so they designed a poster for the new service, they helped design flyers, they liaised with the practice themselves and got an advert up on a, when people book in for an appointment there's a sort of TV screen if you like in the waiting room and it will not only tell people to go</i></p>

	<p><i>through to their appointment but also err there was like an advert if you like for the service on there so people would just see it and be a little bit more familiar with that erm so engaging through those groups was really helpful and again me attending their meetings was helpful for them to get to know me [right] I also later met, through the PPG meeting at [practice], some of their patient public members who are involved with other community groups such as the University of the Third Age so they... they invited me to do a talk over there so I went and did a talk to sort of 40 or so people from [area] who were engaged with that, again told them more about osteo-arthritis, told them more about the service and what I was providing and things so it was trying to again engage on multiple levels, some through sort of, through as I said, clinicians, managers, but also importantly also engaging with patients and public stakeholders as well.</i></p>
<p>Knowledge mobilisation strategies</p> <p>a) The role of the knowledge mobiliser</p>	
<p>2.26. Participants reported the knowledge mobiliser to be an essential role in implementation in primary care</p>	<p><i>Having a knowledge mobilisation, someone who can broker that information, can make it concise can separate the wheat from the chaff and can get the salient points across in an easy digestible way is important because as a busy clinician you just simply can't keep up to date with how do I know if the latest trial in diabetes is more important than the latest guidelines that come out in, I don't know, gout. It's a lot to sort of be wrestling with at any one time so I think having people whose job is</i></p>

	<p><i>dedicated to supporting and facilitating that knowledge mobilisation that might help the process</i></p> <p><i>you have to have a credible lead, er, to help to implement that with you. And a credible lead isn't necessarily somebody medical who works in the academic world. It's somebody who works in the same world as the GP practices.</i></p>
<p>2.27. Participants expressed uncertainty as to whose role it is to mobilise knowledge for implementation some participants viewed it as everybody's role, some viewed it as senior person such as manager</p>	<p><i>I guess it's giving people, making everybody a patient champion making everybody a person champion, a champion of knowledge, just giving people that information and the encouragement to just go out and talk to others and use their own networks to spread the message wider</i></p> <p><i>I suspect that managers are the ones who are changing services or who are leading change from within an organisation in a very top down kind of way. The NHS isn't always set up to facilitate bottom up, whether that's from, if you like, junior members of staff or whether that's from patients and public change, I'm not sure that that's always quite such a easy way of bringing about change, it needs to have erm either it's part of a manager's job description to engage all these stakeholders, or maybe a knowledge mobilisation fellow type person could be there facilitating these things</i></p>
<p>2.28. Some participants reported a desire to make the KMbr role formal for example with a specific job specification</p>	<p><i>Busy clinicians just don't have the time so I think having people whose job is dedicated to supporting and facilitating that knowledge mobilisation that might help the process.</i></p>

<p>2.29. The skill set of the KMr essential to implementation includes...incl. change language</p>	<p><i>enthusiastic, knowledgeable implementer, team</i></p> <p><i>Someone who can broker information, can make it concise, can separate the wheat from the chaff and can get the salient points across in an easy digestible way is important because as a busy clinician you just simply can't keep up to date with it</i></p> <p><i>I 100% do and you know one of the things that you know is my USP is definitely that you know I don't have huge knowledge in any of these areas but I have seen the language that people speak and the barriers that occur because people do not know what somebody's talking about or what the systems or processes are we have to go through to get something done</i></p>
<p>2.30. Individuals perceived to be key KMr did not recognise this role. Can you say why? Not in job descriptions, revert to type, mobilising knowledge was seen as part of another role eg setting up a new service</p>	<p>The role of a knowledge mobiliser was identified as having different meanings and implications to different people depending on the task or context</p> <p><i>do you see that as part of your role?</i></p> <p><i>IV: So, erm, so yes and no but I guess my personal role is a bit of a mixed bag</i></p>
<p>b) Knowledge networks</p>	
<p>2.31. The affiliation to networks/groups was reported to be beneficial in optimising implementation because it was seen</p>	<p><i>To be honest that whole process would be very challenging without the strong links that (we) already had</i></p>

<p>to speed up implementation/overcome barriers/get message to more people/understand language</p>	<p><i>(name) was involved at a CCG level because he was a locality lead at the time, so he could pull a few strings, 'having someone in-house can shift thoughts'</i></p>
<p>2.32. Implementers reported that their networks gave them confidence in implementation by/because the wider team added credibility to the venture, felt confident in trailblazing something new and provided x</p>	<p><i>And then you start to understand where the systems and processes are letting people down and actually where what you're doing can either help to resolve it or what barriers are going to be created because people don't even realise that something is going to be a problem you know? So, it's not the principle that's broken, it's the processes are not going to facilitate it happening</i></p>
<p>2.33. Participants reported how implementation was optimised if they received knowledge from a trusted, credible source (often with their peers network)</p>	<p><i>Very important and, as I said, that created the groundswell of interest simultaneously with what was happening with the clinicians and if anything, possibly more important, because a lot of people were either brothers, friends, of the initial people I spoke to in that PPG group, you know, might be a sister , a mother, a whoever, they kind of then told them about the service, they went in, spoke to their GP, said I'm really interested in hearing more about this or can you refer me to the new physio service</i></p> <p><i>you have to have a credible lead, er, to help to implement that with you. And a credible lead isn't necessarily somebody medical who works in the academic world. It's somebody who works in the same world as the GP practices.</i></p>
<p>2.34. Many participants preferred face to face mobilisation of knowledge, with concise messages/sell points</p>	<p><i>face to face</i></p>

	<i>Er, and then in addition to that it's that exposure to yeah okay the evidence is there and case studies are there but actually it's the human narrative. So the networks for me is about human contact with other people, it gets far more synapses I think than reading something.</i>
2.35. Participants reported how including all relevant stakeholders at the start of the research journey (co-production) was beneficial because it provided an opportunity to identify any potential barriers and allowed stakeholders to understand the context for implementation	<i>To have the right people around the table from the beginning from when you're trying to describe what it is that you want to do. Because that's when you'll pick up what the win, wins are and what the barriers will be.</i>
2.36. Clinical participants report how the networks of the academic institution were important for KM for implementation because they enabled a wider reach for implementation messages to be shared which provided a platform/foundation for KM	<i>I think we probably have achieved it most through the networks with (academic institution), you know the events that you've either been involved in or facilitated so the MSK network, the AHSN day, certainly the right care facilitated days. So all of those opportunities you know giving me a slot on the agenda to talk about what we've done. I think those have probably been the most effective.</i>
c) Evaluation	
2.37. Evaluation needs to be tailored to key stakeholder drivers and priorities	<i>The commissioners? Yeah, saving money. So, erm cost improvement schemes, I don't know what they're called now, but they're similar. So, a plan where you know, if I can convince them that by doing Jigsaw we're reducing the number of people going for knee replacements, then they'll buy into that. So, it's finance at the moment. But in (area) they weren't interested in the quality practice, I tried to sell it to the commissioners and the GP's as this is a quality</i>

	<p><i>thing that you're doing, you're improving people's lives, reducing their pain levels, reducing their fitness, but no...</i></p> <p><i>So, commissioners want the numbers about money...yeah, they want the data, the hard data.</i></p>
<p>2.38. One participant reported how current system design stymies relevant evaluation by not facilitating/enabling/allowing the collection of relevant data</p>	<p><i>Data collection that isn't built because the business intelligence units in CCG and in Trusts is all about collecting activity. You often can't get the data that you need as a clinician because nobody's collecting that and you won't get it collected if it's not going to give a cost saving or it's not aligned to a particular KPI for a service</i></p>
<p>2.39. Co-production of implementation plans with all key stakeholders at the start of the research journey was suggested as a way of ensuring appropriate evaluation of implementation</p>	<p><i>Okay so if we go back to the, without being overly critical, obviously the timeframe that was put into EMIS for the purposes of, er, JIGSAW. Er, right from the outset we raised that it didn't provide with information that would be useful to us. So, you didn't provide us with pathway information so we didn't collect any information about whether the patient's outcomes, whether they were any problems, whether they were referred on for an X-ray, whether they were referred to secondary care, whether they were referred to physiotherapy, none of that data was collected. And of course, as a commissioner you're going to look at the whole pathway. So I appreciate, I understand an element of where this was coming from was you know this was about the analysis of the, er, interaction with the patient and the number of times that this was fired in the system and all of that. But actually, it needed to be a win, win for both of us.</i></p>

	<p><i>Er, so it was reviewed, and I could not honestly, er, present any data to demonstrate a benefit to the CCG. And so the funding of it was removed, I didn't even have audit results from (academic institution), er, because they didn't complete their audit until, it was quite delayed it was not completed until after the enhanced service was reviewed.</i></p>
<p>2.40. Evaluation identified how the support of the research team was essential in initiating implementation and routinisation of the intervention</p>	<p><i>You know because quite often when they want, when there is a necessity for change they want you to give them a plan every step of the way. And if I reflect back to how successful MOSAIC was, they were supported to make the change every step of the way and everything was funded but you know right down to the setting up the clinics, the training, when the nurse was out, backfilling the nurse, you guys supported them every step of the way</i></p>
<p>2.41. Participants reported how ongoing implementation of the intervention (to routinisation) ceased when the support of the research team was withdrawn</p>	<p><i>And once you've stepped away actually even when we continue to fund the enhanced service, er, practices from the first fell off of the participation.</i></p> <p><i>There's a point at which I think it should take off and the experience so far with Jigsaw in the UK is that it hasn't taken off, it needs pushing all the time, it's the snowball uphill kind of thing, erm, it's... I don't honestly think it's ever gained much momentum</i></p>

Systematic review

What are the factors (barriers and facilitators) that influence implementation of evidence-based guidelines for osteoarthritis (OA) in primary care?

Key findings	Sample quote
Individual professional motivators	
<p>3.1. Individual clinician’s motivators influenced engagement with implementation (of evidence-based guidelines)</p>	<p><i>‘Your book, your thing, I want you to read it all. I want you to bring any questions.’ Making them in charge of their health, responsibility of their problem, engaging them, almost, and I hate this word, but empowering them (GP4).</i></p>
<p>3.2. HCPs reported engagement with implementation because the intervention was perceived to enhance consistency but also gave more treatment options</p>	<p>GPs described how they thought that participating in the study allowed them to “offer more” practical advice and support above and beyond what they would usually provide. This related to the earlier discussion of how they felt their practice had changed. A second element was that the GPs felt they were able to more clearly describe OA and discuss the various ways of managing or treating OA:</p> <p><i>It gave us the time to actually focus on arthritis and the symptoms that patients were presenting with to be able to give them the best of our knowledge but also what you</i></p>

	<p><i>improved on. So yeah it gave a lot to me but also to the patients (GP7).</i></p> <p><i>"I think first of all it made you try to take a more positive approach rather than just say "Well, you've got arthritis". And I think it also gives you a few more strings to your bow, really, in terms of what you can tell a patient, what you can inform them, what we'd be able to offer through a clinic. Yes, good." (MNPT28).</i></p>
<p>3.3. HCPs reported that training enhanced their knowledge and confidence in managing OA</p>	<p>GPs detailed three key ways that their handling of OA in clinical practice had changed. First, they detailed how they valued new knowledge about OA as a disease process and additional OA treatments. Consequently, GPs said that they had a good "structure" for managing the consultation (which was in part influenced by the presence and format of the template). Therefore, they said they no longer automatically referred patients for X-rays but rather used the systematized approach from the training. Aligned with this, they said that they had altered the terminology used when describing OA as a diagnosis to patients:</p> <p>Nurses focused on the gains in biomedical knowledge that they had acquired as part of being involved in MOSAICS. First, they detailed how they had found it useful to be able to discuss what OA is and why it occurs with patients:</p> <p>Like the GPs nurses described how they felt more confident dealing with patients who consulted with OA. Nurses also suggested that they were able to alter their relationship with OA patients, because the study represented an opportunity to play more of an active role in patient care:</p>

<p>3.4. Some GPs reported that the intervention failed to provide treatment options as they viewed their role as a gatekeeper for onward referral</p>	<p>However, this GP questioned the amount of training needed just in order to refer patients. The idea of referring patients seemed coherent and attractive to a number of GPs so the approach made sense and gained their interest, but others realised that their contribution was part of a continuum of care:</p> <p><i>"[...] either we're just the people that let patients into the clinic, and in that case it doesn't matter whether I know anything about it or not, or we're an active part of that treatment journey."</i> (MNPT16).</p>
<p>3.5. Some practice nurses reported that implementation of the evidence-based innovation provided a foundation for future consultations</p>	<p>Thus, for nurses the guidebook as a consultation resource helped to 'set the scene' by providing a description of the condition to patients and it formed a launch pad for subsequent care they provided.</p>
<p>3.6. Most GPs viewed implementation of the evidence-based innovation as a vehicle to 'dispose of patients' and to shift future management to either the practice nurse or to the patient</p>	<p>One of the key strengths for GPs was their perception that they now had a more comfortable way of closing off consultations or "disposing" (May et al., 2004) of patients. Being able to offer the guidebook and refer on to see the nurse was seen as a "natural" way of ending the consultation smoothly and minimising the risk of aggravating patients who may feel that they should get more from the GP:</p> <p><i>So that's very favourable because it means that the consultation, often the consultation if it ends in a referral or a prescription that is a very natural end to a consultation and it means it's quite easy to close off [...]. So having that</i></p>

	<p><i>as a natural end point is always beneficial for a ten-minute consultation (GP5).</i></p>
<p>3.7. PNs reported valuing implementation of an intervention that aligned with holistic care</p>	<p>Nurses, like the GPs, found it a useful resource for reiterating the key messages about self-management (for example keeping active or taking medication) that they delivered as part of the intervention:</p> <p>The other elements the nurses highlighted concerned their ability to offer patients alternatives, especially to surgical interventions, and strengthening their approach to holistic care:</p> <p><i>“Well, I mean if you've got a patient coming in who's diabetic, coming for his annual review and he's limping a bit, he's not doing a lot of exercise, we're not focusing on the OA [...] whereas now we're looking at it a whole lot differently.” (P1)</i></p> <p>The above statement initiated further discussion about the transferability of the new skills acquired to other conditions, thus allowing them to support patients with multiple conditions and/or treat them as a whole person.</p>
<p>3.8. Some GPs report CPD and personal appraisal as a benefit of engaging in implementation</p>	<p>The GPs present all appeared positive about the study, mainly because it does not require extra time, can contribute to Professional Development Plans, highlights a condition that tends to be neglected. It was not clear how much they understood about the different approach or the nurse clinic. The idea of referring the patients to a nurse</p>

	<p>seemed to be received well. (Observation Practice 3, 8/6/2012).</p> <p>potential improvements in quality of care and continuing professional development.</p>
<p>3.9. GPs valued strategies to legitimise patients concerns regarding joint pain</p>	<p>GPs described how they thought that participating in the study allowed them to “offer more” practical advice and support above and beyond what they would usually provide. This related to the earlier discussion of how they felt their practice had changed. A second element was that the GPs felt they were able to more clearly describe OA and discuss the various ways of managing or treating OA:</p> <p><i>It gave us the time to actually focus on arthritis and the symptoms that patients were presenting with to be able to give them the best of our knowledge but also what you improved on. So yeah it gave a lot to me but also to the patients (GP7).</i></p>
<p>3.10. PNs reported engagement with the intervention because it aligned with their desire to increase professional autonomy</p>	<p><i>Oh, with OA, definitely, you know, definitely, because I was able to, I suppose in a way, treat them autonomously. I didn't need to refer them, sort of, to the doctor to discuss the arthritis and, you know, I felt, as I say, I felt prepared and better to treat the patients (Nurse 3).</i></p> <p>Thus, the nurses felt able to extend their scope of practice and take on more responsibility, or as one nurse put it ‘taking the lead’ and not referring back to the GP.</p>

Preferences for self-management

3.11. Implementation was optimised if the intervention aligned with patient and/or clinician preferences for self-management

GPs also thought that consultations could 'empower' patients to look after their own condition. The guidebook was depicted as a tool to help this process:

The guidebook provided a flexible tool with which to support individuals' preferred self-management approaches, which may or may not directly mirror professional advice.

Conversely, GPs detailed tensions that arose when discussing pain medications and lifestyle advice which conflicted with patients' expectations:

And that then is tricky to educate somebody when they've come along with an idea of well this happened or that happened and my friend got an injection and so on (GP3).

GPs discussed problems with patients who had low levels of "motivation" who did not want to become "responsible" for their own health. Thus, the balance between incorporating a new way of working and not upsetting patient relations was outlined as a problem within the trial. Furthermore, GPs did not necessarily think that patients who had an "agenda" or "lacked motivation" would gain any benefit because they may not be open to taking on board the advice provided:

	<p><i>We have to accept that there may be a high level of failure rate due to lack of motivation on the patient's behalf. That's probably the best way to wrap it up! (GP2).</i></p>
<p>3.12. Implementation was influenced by the patient preferences for HCP participation/engagement in the consultation</p>	<p>None of the other patients reported that they have used the booklet during a consultation after receiving it; in short they were neither encouraged to monitor their symptoms using the booklet nor asked to bring it to subsequent consultations. One patient even suggested that the GP actually discouraged the use of the booklet</p> <p><i>The booklet was never discussed with the GP, they do not have time for that, you only have ten minutes."</i></p> <p><i>I do not use the booklet, as I have adequate support from my GP, physical therapist, and physician assistant."</i></p>
<p>3.13. GPs reported being uncertain in their role in implementing evidence-based interventions for OA</p>	<p>However, this GP questioned the amount of training needed just in order to refer patients. The idea of referring patients seemed coherent and attractive to a number of GPs so the approach made sense and gained their interest, but others realised that their contribution was part of a continuum of care:</p> <p><i>"[...] either we're just the people that let patients into the clinic, and in that case it doesn't matter whether I know anything about it or not, or we're an active part of that treatment journey." (MNPT16).</i></p> <p>Not all GPs were clear about the link between the GP and nurse consultations, or some appeared to think about their</p>

	part in a minimal way which allowed them to shift the work to the nurse.
3.14. GPs reported assumptions about patient preferences for the intervention (in positive and negative ways)	<p>Does this need to be more specific at this stage? GPs reported the intervention made patients feel like they were being delayed in seeing a specialist ??</p> <p>Another concern was that some patients may not wish to be referred to the nurse because it potentially conflicted with the patient's agenda: as one GP put it "patients think they are being delayed" in their quest to see a specialist. Alternatively, some GPs outlined how they sensed that some patients felt that they had to "jump through" additional hoops in their care pathway and had a "further layer", or burden of "hard work" (May, 2006), to deal with when referred to the nurse. These GPs observed that the nature of people's overall disease burden played a part, which led to people not always attending nurse clinics:</p> <p><i>Because often these are patients with lots of co-morbidities, so they've already going to diabetic clinic, or hypertension clinic, and adding another clinic on top of that for them to go to just felt a bit much for them, I think, sometimes (GP6).</i></p>
Primary care systems	
3.15. Demonstrating sensitivity to local context facilitates implementation	First, the intervention fitted existing patterns of organizational working, namely, referral and interprofessional roles, and demonstrated that roles had been clearly and satisfactorily defined and adopted in GP

	<p>practices. Thus, it meant that cognitive participation (or defining roles and responsibilities) was easily met.</p> <p>Larger practices suggesting they had more capacity to accommodate these issues, and the will of practices to utilize the remuneration received to arrange for cover</p> <p>Collective action was achieved by GPs and nurses by ensuring that timetabling was amended to ensure components (training and clinics) of the intervention fitted into routine practice.</p> <p>For both professional groups who delivered the intervention, one of the key factors which made it implementable was the intervention's congruence with existing general practice structures, referral pathways, restrictions on consultation times and individuals' interpretations of their existing care philosophies.</p> <p>The research team should demonstrate sensitivity to the local context, especially the unique characteristics of each general practice.</p>
<p>3.16. HCPs (mostly GPs) reported the need to consider several/many other priorities when deciding whether to implement the intervention</p>	<p>For the GPs one of the key potential problems with participating in the study related to ensuring that time and staff were not diverted from their routine work:</p> <p>GPs expressed that the complete intervention was unlikely to be maintained. While they thought that OA clinics could potentially be linked to other chronic care agendas, they did not want to continue with them as a standalone entity. GPs, and in particular senior partners from practices,</p>

	<p>outlined that they did not have the necessary organizational resources to operationalize OA clinics:</p> <p><i>And the OA clinics take a lot of time. I mean it's okay while you're resourced, but once the study is finished, it's a lot of time. Basically, every Monday morning is written off. Written off's not the right word but used up in OA clinic. Now, on-going, non-resourced nurse time of an OA clinic, half a day every week, has a great cost implication (GP7).</i></p> <p>This related to organizational priorities and targets practices had to meet as set by policy agendas and incentivization, for example: GP1:</p> <p><i>The reason I'm slightly hesitant is that I just know we haven't got chronic, any of our chronic disease management clinics running properly yet (small laugh). Osteoarthritis would be lower down the pecking order I think than getting our diabetes service sorted out.</i></p> <p>GPs at a smaller practice did suggest that taking part in the study was problematic because "it's taken away time, nursing time" from other clinical areas that GPs thought were important to focus on, despite receiving remuneration for the time given over</p>
<p>3.17. GPs report that practice managers and administration staff have a role in implementation, however these professional groups were not included in any study</p>	<p>All GPs suggested that their practice managers and administrative staff had managed to work around these constraints and reschedule resources accordingly and the times and dates of the GP training were negotiated with each practice to fit round their schedules</p>

<p>3.18. Implementation was optimised if the intervention requires minimal system level change</p>	<p>Consequently, GPs felt that their time was not consumed by patients constantly consulting for OA, and by referring to the nurse they could “actually be treating someone else”:</p> <p><i>You know if we were expected to do that that would be a whole new consultation, another ten minutes but using the nurses you know they’re more than able to take on that role and I think the patient, the ones that I spoke to, quite liked the fact that they had that opportunity (GP7).</i></p>
<p>3.19. A whole team approach (including engagement, discussion, reflection) optimised implementation</p>	<p>The interpretation of the roles within the practice became clear in this meeting in which the GPs controlled the decision that the content of the intervention fitted with their current approach; the lead nurse followed the GPs' lead and took charge of sorting the nurse clinics and indemnity, while the practice manager took responsibility for the financial aspects.</p>
<p>3.20. PN engagement in planning implementation was variable</p>	<p>With no nurses present at the meeting the implications for their working practice could not be gauged.</p> <p>However, not all practices arranged for their full team to be present at the introduction meeting, and thus differences in the initiation of sense-making occurred. For example, one very large group practice brought together almost half of their GPs which they called ‘great attendance for this meeting’ and discussed the study and decided on participation.</p>

	<p>Conversely, only one of the nurses had attended the introductory meeting, but she had not fully grasped what the training would involve. Nothing about the study had subsequently been communicated to the second nurse, thus the revelation that the practice would be in the intervention arm was 'a shock'. The practice nurses raised a number of practical and personal barriers. At this and subsequent meetings the research team had to reassure and accommodate the practice nurses so they could participate in the training and commit to running the clinics.</p>
<p>3.21. Leadership style facilitates implementation</p>	
<p>3.22. HCPs and researchers report consistency in mobilising knowledge to all primary care team members as a challenge</p>	<p>One of the reasons for the lower number of referrals could be due to having locums in the practice. For the past 5-6 months (covering the study period) there have been 3 locums to cover staff sickness. They have been doing the bulk of consultations during this time. GP11 & GP12 were unsure as to whether the locums had been briefed about MOSAICS</p> <p>Thus, not briefing locum doctors (and it was latterly revealed new salaried GPs too) or notifying the study team that new staff potentially needed training meant that the intervention was not fully communicated and "collective action" (thus delivery) was not always achieved.</p> <p>Cognitive participation was not always fully achieved in larger practices with high staff turnover because the system of internal communications, and external</p>

	communications with research team, was not conducive to keeping new GPs informed of the study.
3.23. Some practice nurses reported that implementing the intervention was the decision of the GP	Perhaps unsurprisingly nurses thought that they had little say in the decision whether to continue with the clinics beyond the study. As one nurse put it “the GPs are in charge”. At another practice a nurse stated: <i>The only thing is if the doctors wanted to carry on, that’s the only factor. If they want it then we will do it (Nurse 3).</i>
Evaluation	
3.24. HCPs reported the need to capture relevant outcomes (motivators to continue)	In the intervention practices no formal, structured collective process for collecting information, reviewing or reflecting on the intervention appeared to exist. This was not necessarily an impediment to implementation because GPs and nurses were quite clear that they had appraised the new approach within their individual practice and decided what could be modified at the micro level and what they realistically could continue beyond the end of the study.
3.25. HCPs reported policy and regulatory factors such as QOF influencing implementation	Long-term implementation of the whole intervention model was dictated by two things. First, power relations and decision making within the practices. Second, the influence of external drivers such as policies and financial incentives.

	<p>Osteoarthritis would be lower down the pecking order I think than getting our diabetes service sorted out.</p> <p>Interviewer: why do you think that would be the case?</p> <p>GP2: <i>I think that would be the case really because of the QOF work load and the way in which GPs are rewarded for monitoring chronic disease and also the importance of trying to get tight glycemc control and monitoring in place for diabetics I think that we would prioritise diabetic care and try and get that optimised before we would cast our gaze towards osteoarthritis.</i></p>
<p>3.26. Evaluation planning should take place at the start of the process</p>	
<p>3.27. HCPs reported an ad-hoc/pick and mix style of implementation following individual reflection and evaluation</p>	<p>GPs described how they had absorbed the structure of the template and used it to guide their consultations:</p> <p><i>As GP2 was just saying earlier it's, kind of, embedded in his head already, so he's doing it without the structure of the template, whatever. I still use that structure (GP1).</i></p> <p>GPs suggested that the template structure was easily followed and could be sustained beyond the lifespan of the study. They also said that they would continue to hand out OA guidebooks or other resources (usually Arthritis Research UK "keep moving" exercise leaflets) so long as they were freely available. Nurses outlined that they too would opportunistically embed core principles of the</p>

	consultation into their routine chronic condition clinics and use written resources as appropriate
<p>3.28. PNs reported the measurement and evaluation of 'providing lifestyle advice' as challenging</p>	<p>This was not necessarily seen as negative in that it gave them the opportunity to enhance their work. One issue raised in relation to assessing the value of their input was the following:</p> <p><i>"[...] how can they measure that because you can't measure the skill of listening to a patient [...]. But that takes a lot out of a nurse, really, the skill of listening in terms of psychologically and emotionally, but it takes time"</i> (P3).</p>

Appendix 12: Final finding statements for consensus exercise

Q	Recommendation statement	% agreement						
		Strongly agree	Agree	Somewhat agree	Neutral	Disagree	Somewhat disagree	Strongly disagree
1	When implementing in primary care, offer knowledge mobilisation approaches that;							
	a) Are grounded in a theoretical approach							
	b) Utilise a range of different types and formats of knowledge, (including guidelines, experience, tacit knowledge and case stories)							
	c) Are face to face							
	d) Provide opportunities for reflection and feedback							
	e) Are delivered by credible knowledge mobilisers							

	f) Involve the whole general practice organisation							
2	The ability of individuals to mobilise knowledge for successful implementation is enhanced if they are part of multiple networks							
3	A trusted, credible individual needs to be identified to lead implementation projects at each beacon site							
4	Everybody has a role in driving knowledge mobilisation (for example clinicians, commissioners, patients, public)							
5	Knowledge mobilisation should be driven by key decision makers in an organisation (for example manager, or someone in a senior role)							

6	The role and responsibilities of dedicated knowledge mobiliser should be defined at the beginning of implementation							
7	The knowledge mobiliser role needs to be explicit (for example acknowledged in job specifications)							
8	Those promoting implementation within a general practice organisation need an understanding of:							
	a) Leadership and decision makers in the organisation							
	b) Culture in the practice, including attitudes to change and change fatigue							
	c) The characteristics (and needs) of their patient population							
	d) The characteristics and skill mix of the practice staff							

	e) The characteristics of the practice network (for example whether it works in isolation or in a network such as a locality group of practices)							
9	Offer dedicated time for a whole practice approach to implementation planning including all stakeholders such as clinicians, practice managers and administrative staff							
10	Determine the approach to evaluation at the planning stage, including consideration of relevant outcome data that meets the needs of all stakeholders							
11	Determine the approach to sustainable implementation at the outset							

12	Involve patients in implementation and evaluation planning							
13	Those who are driving, and leading implementation need to be able to demonstrate to stakeholders that the intervention;							
	a) Offers flexibility in who it is delivered by, where its delivered and how							
	b) Offers flexibility in meeting a range of patient preferences e.g. to self-manage							
	c) Aligns with clinician beliefs and values							
	d) Aligns with health policy							
	e) Aligns with patient expectations							

	f) Offers opportunities to enhance care without disrupting the 'equipoise' within a general practice organisation							
14	Those promoting adoption of implementation within a general practice need to appeal to a range of different priorities including;							
	a) Individual clinician priorities including CPD, appraisal							
	b) Patient priorities							
	c) Practice priorities including targets							
	d) Commissioning priorities such as cost savings or reducing referrals							

Getting evidence into practice in primary care: Stakeholder engagement project

Dear delegate,

As part of a PhD study, we have identified several factors that may optimise the process of getting evidence into practice in primary care. We aim to produce a set of draft recommendations for implementation in primary care and are seeking the opinions of primary care stakeholders to shape this work.

At the National Knowledge Mobilisation Event that you have registered to attend (November 7th), a PhD student (Laura Swaites) will be presenting several options for the potential content of the draft recommendations. There will be the opportunity for you to share your opinions anonymously using digital voting. To conduct this research, we are inviting you to take part in two phases of voting to select your preferred options. Further information of this work will be provided on the day in your delegate welcome pack.

We look forward to seeing you on November 7th

Thank you very much for your help with this project.

Getting evidence into practice: Stakeholder engagement project

Information Sheet

(Version 2.0 16-Oct-2018)

The **Getting evidence into practice** sessions that you are attending at today's conference will form part of a project that explores ways to optimise the process of getting evidence into practice in primary care. You are being invited to participate in two simple voting exercises [insert title and time of sessions once finalised] to share your opinions on this topic to inform the development of draft recommendations for implementation in primary care.

Aims of the study

We are seeking your views and opinions on factors that may optimise the process of getting evidence into practice in primary care.

Why have I been invited?

All delegates at today's conference are invited to participate due to their expertise in healthcare research, delivery, implementation and/or commissioning.

Your views are very important, and they will help shape our work for ensuring stakeholders know the best ways of using research findings in the future.

What will the study mean for me?

We are inviting you to participate in two voting exercises (one this morning and one this afternoon), which will last no longer than 30 minutes each. The researcher will present a series of statements using digital voting technology. The use of this technology will be explained clearly to you to enable you to select your preferred options. You do not have to answer any question that you do not want to.

All responses made by you are anonymous. No personal information is collected.

What will the results of the study be used for?

The results of the voting exercise will be used as part of a PhD to inform the development of draft recommendations for implementation in primary care and may be presented in reports, journals or in presentations. You will not be identifiable in any report or publication.

If I would like to take part, what do I have to do?

The researcher (Laura Swaites) will explain the process at the start of each presentation. If you wish to take part, you can vote.

What are the possible benefits (if any) of taking part?

Findings of the study will have no direct benefit to you but may have future benefit for stakeholders in primary care.

Do I have to take part?

No. **Your involvement is entirely voluntary.** You are free to decide whether you wish to take part or not. If you do not wish to take part, **please do not vote.** Once the data has been collected, it will be used as part of the project so from that point you are unable to withdraw from that phase of the project.

If you take part in the first phase of voting, please note that you do not have to vote in the second session. If you do not wish to take part in the second session, then please do not vote. Once you have voted, your data cannot be deleted and will be used in the project.

Opting out

You can decide to withdraw from the second session by not partaking in the digital voting. Once you have voted, data will be entered, collected and used in the project. We are unable to delete your anonymised data.

If you have completed the first round of voting, you may decide not to take part in the second voting session [insert time once finalised]. This is perfectly fine; your data from the first round will still be used.

If you decide not to take part in the voting exercise, your involvement with future research studies run by the Institute for Primary Care and Health Sciences will continue in the usual way and your role will not be affected.

Please ask us if there is anything that is unclear or if you would like more information.

Contact information

Should you have any concerns or questions about any aspect of this study, you may wish to speak to the researcher today who will do their best to answer your questions. You could also contact either Laura Swaithees L.swaithees@keele.ac.uk or Professor Krysia Dziejczak on 01782 734889, or k.s.dziejczak@keele.ac.uk.

Thank you for taking the time to read this Participant Information Sheet.

Appendix 15: Presentation slides from stakeholder consensus exercise



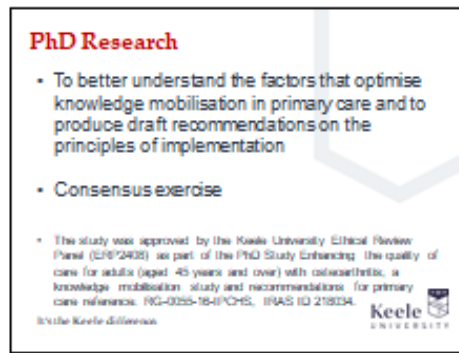
1



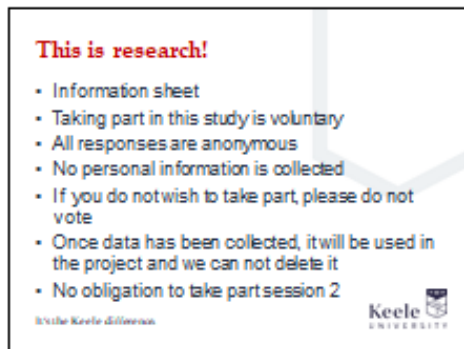
2



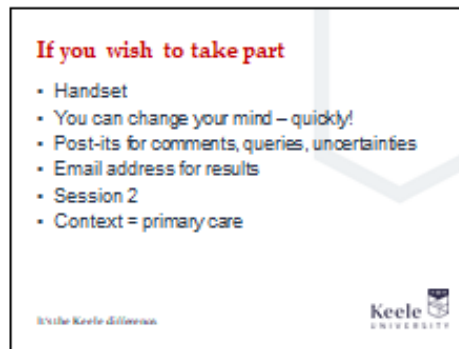
3



4



5



6

Appendix 16: Ethical approval documents for analysis of focus group data




Arthritis Research UK Primary Care Centre
Keele University

Internal data request form

To be completed by the Researcher of proposed study

Proposed Study Title: Enhancing quality care for adults (aged 45 years and over) with osteoarthritis: a knowledge mobilization case study and recommendations for primary care			
Researcher: Laura Marshall PhD student			
Supervisor of Researcher (where applicable): Professor Krysia Dziedzic, Dr Andrew Finney, Dr Zoe Paskins			
Co-authors: Professors Graeme Currie and Christian Mallen			
Is the data required for practicing analysis or demonstration/teaching only? <i>If so, please provide further details</i>	YES	NO	X
Research Question / Objective: <i>(Not required if data required for practicing analysis or demonstration/teaching only)</i> Research questions <ol style="list-style-type: none"> 1. How do primary care organisations, in particular general practices, perceive and experience the process of knowledge mobilization for osteoarthritis? 2. What are the key knowledge mobilization strategies that optimize knowledge mobilization for osteoarthritis? Objective linked to this data request: To gain a broad understanding of the process of knowledge mobilization at the interface between an identified research study (MOSAICS) and implementation project (JIGSAW).			
Outline design of analysis: <i>(Not required if data required for practicing analysis or demonstration/teaching only)</i> All data will be analysed using thematic analysis and the principles of cross-comparison, to discover patterns and developing themes.			
Study (or studies) from which data are requested: MOSAICS			

<p>Study population required <i>(For quantitative studies please specify if there are specific groups of participants required from the study e.g. age range, gender, and for qualitative studies please specify the demographic or sample frame and the number of participants you require):</i></p> <p>General practitioners and other professionals who were involved in the following; Focus group discussion data of a multidisciplinary group following MOSAICS training in the model OA consultation with control practices (data custodian Paskins)</p>					
<p>Precise data required <i>(For quantitative data please be specific on survey wave (e.g. baseline data) and list all variables required and for qualitative data please detail the type of data required (e.g. interview transcripts, diaries etc):</i></p> <p>Focus group transcripts</p>					
<p>Is new REC approval required?</p>				<p>NO</p>	

<p>Into which Centre portfolio and methodology group(s) does this study fit? (Please tick all that apply)</p>			
OA Trials.....	<input checked="" type="checkbox"/>	Quantitative Trials.....	<input type="checkbox"/>
Musculoskeletal Trials.....	<input type="checkbox"/>	Quantitative Epidemiology...	<input type="checkbox"/>
OA Epidemiology.....	<input type="checkbox"/>	Qualitative.....	<input checked="" type="checkbox"/>
Musculoskeletal Epidemiology...	<input type="checkbox"/>	Behavioural.....	<input type="checkbox"/>
Inflammatory Studies.....	<input type="checkbox"/>	User Involvement.....	<input type="checkbox"/>
		Education & Training.....	<input type="checkbox"/>
<p>Signature of Supervisor of Researcher requesting the data:</p> <p></p> <p><i>I confirm that the data specified in this request are required to answer the research question. If there are any queries in relation to the data requested I understand that it is my responsibility to support the researcher to complete an accurate data request form, in line with the needs of the research question</i></p>		<p>Date:</p> <p>30.8.17</p>	
<p>Signature of Principal investigator(s) of study (or studies) from which data are requested:</p> <p></p>		<p>Date:</p> <p>30.8.17</p>	
<p>Date of data release:</p> <p>5th Sept 2017</p>		<p>Signature of data custodian upon data release:</p> <p></p>	
<p>NB The data must be stored on your S:drive only in accordance with the Centre's Procedures for data security and management of identifiable and sensitive data relating to research participants and Standard Operating Procedures, and the principles and conditions set out in the Data Protection Act 1998, the Research Governance Framework, and with proper safeguards to ensure confidentiality.</p>			

Appendix 17: Ethical approval documents for individual interviews



Date: 06-Dec-2017

Sponsor Regulatory Green Light

Short Project Title: Enhancing quality care for adults (aged 45 years and over) with osteoarthritis(OA): a knowledge mobilisation case study and recommendations for primary care

Sponsor RG code: RG-0055-16-IPCHS

IRAS ID number: 218034

Chief Investigator: Professor Krysia Dziezic

Dear Krysia,

The following documentation has been received by the Research Integrity Office:

- University Ethics approval letter, dated 27/04/2017, and all conditions are confirmed as having been met
- HRA approval, dated 10/11/2017

The study may now commence. It is your responsibility to ensure that the HRA processes for confirming capacity and capability are followed (<http://www.hra.nhs.uk/resources/hra-approval-guidance-for-sponsorschief-investigators-working-collaboratively-with-nhs-organisations-in-england/>), that appropriate training is provided, site initiation visits are arranged and that agreements with sites are in place prior to the start of recruitment.

The Research Integrity office must be contacted if any advice is required regarding compliance with regulatory issue or if there are any doubts about participant safety, reporting requirements or scientific integrity of the study.

Yours sincerely

A handwritten signature in black ink, appearing to read "E. Skinner".

Emma Skinner
Research Integrity Manager

Cc: Laura Marshall

Professor Krysia Dzedzic
Arthritis Research UK Primary Care Centre
Research Institute for Primary Care and Health Sciences
Keele University
ST5 5BG

Email: hra.approval@nhs.net

10 November 2017

Dear Professor Dzedzic,

Letter of HRA Approval

Study title:	Enhancing quality care for adults (aged 45 years and over) with osteoarthritis(OA): a knowledge mobilisation case study and recommendations for primary care
IRAS project ID:	218034
Protocol number:	RG-0055-16-IPCHS
Sponsor	Keele University

I am pleased to confirm that **HRA Approval** has been given for the above referenced study, on the basis described in the application form, protocol, supporting documentation and any clarifications noted in this letter.

Participation of NHS Organisations in England

The sponsor should now provide a copy of this letter to all participating NHS organisations in England.

Appendix B provides important information for sponsors and participating NHS organisations in England for arranging and confirming capacity and capability. Please read *Appendix B* carefully, in particular the following sections:

- *Participating NHS organisations in England* – this clarifies the types of participating organisations in the study and whether or not all organisations will be undertaking the same activities
- *Confirmation of capacity and capability* - this confirms whether or not each type of participating NHS organisation in England is expected to give formal confirmation of capacity and capability. Where formal confirmation is not expected, the section also provides details on the time limit given to participating organisations to opt out of the study, or request additional time, before their participation is assumed.
- *Allocation of responsibilities and rights are agreed and documented (4.1 of HRA assessment criteria)* - this provides detail on the form of agreement to be used in the study to confirm capacity and capability, where applicable.

Further information on funding, HR processes, and compliance with HRA criteria and standards is also provided.

IRAS project ID	218034
-----------------	--------

It is critical that you involve both the research management function (e.g. R&D office) supporting each organisation and the local research team (where there is one) in setting up your study. Contact details and further information about working with the research management function for each organisation can be accessed from www.hra.nhs.uk/hra-approval.

Appendices

The HRA Approval letter contains the following appendices:

- A – List of documents reviewed during HRA assessment
- B – Summary of HRA assessment

After HRA Approval

The attached document "*After HRA Approval – guidance for sponsors and investigators*" gives detailed guidance on reporting expectations for studies with HRA Approval, including:

- Working with organisations hosting the research
- Registration of Research
- Notifying amendments
- Notifying the end of the study

The HRA website also provides guidance on these topics and is updated in the light of changes in reporting expectations or procedures.

Scope

HRA Approval provides an approval for research involving patients or staff in NHS organisations in England.

If your study involves NHS organisations in other countries in the UK, please contact the relevant national coordinating functions for support and advice. Further information can be found at <http://www.hra.nhs.uk/resources/applying-for-reviews/nhs-hsc-rd-review>.

If there are participating non-NHS organisations, local agreement should be obtained in accordance with the procedures of the local participating non-NHS organisation.

User Feedback

The Health Research Authority is continually striving to provide a high quality service to all applicants and sponsors. You are invited to give your view of the service you have received and the application procedure. If you wish to make your views known please use the feedback form available on the HRA website: <http://www.hra.nhs.uk/about-the-hra/governance/quality-assurance/>.

HRA Training

We are pleased to welcome researchers and research management staff at our training days – see details at <http://www.hra.nhs.uk/hra-training/>

Your IRAS project ID is 218034. Please quote this on all correspondence.

IRAS project ID	218034
-----------------	--------

Yours sincerely

Miss Lauren Allen
Assessor

Email: hra.approval@nhs.net

Copy to: Dr Clark Crawford (Sponsor contact)
Ms Gail White, NIHR CRN West Midlands (Lead NHS R&D contact)

Appendix A - List of Documents

The final document set assessed and approved by HRA Approval is listed below.

<i>Document</i>	<i>Version</i>	<i>Date</i>
Confirmation of any other Regulatory Approvals (e.g. CAG) and all correspondence [Internal data request]		
Confirmation of any other Regulatory Approvals (e.g. CAG) and all correspondence [Keele ERP approvals]		
Confirmation of any other Regulatory Approvals (e.g. CAG) and all correspondence [Keele ERP amendment approvals]		
Confirmation of any other Regulatory Approvals (e.g. CAG) and all correspondence [MOSAICS approvals]		
Confirmation of any other Regulatory Approvals (e.g. CAG) and all correspondence [MOSAICS approvals]		
Confirmation of any other Regulatory Approvals (e.g. CAG) and all correspondence [MOSAICS approvals]		
Contract/Study Agreement template [Sponsor agreement]		27 October 2017
Covering letter on headed paper [IRAS covering letter]		16 September 2017
Evidence of Sponsor insurance or indemnity (non NHS Sponsors only) [Insurance]		31 July 2017
HRA Schedule of Events	1.0	08 November 2017
HRA Statement of Activities	1.1	09 November 2017
Interview schedules or topic guides for participants [Appendix 3 Interview Topic Guide]	2.0	30 May 2017
IRAS Application Form [IRAS_Form_06112017]		06 November 2017
Letter from funder [Letter of Intent]		04 February 2015
Letter from funder [Funding contract]		03 March 2016
Letter from sponsor [Letter from sponsor]		24 October 2017
Letters of invitation to participant [Appendix 5 Interview Invitation Letter and Reply Slip]	2.0	30 May 2017
Letters of invitation to participant [Appendix 7 Interview Reminder Letter]	2.0	30 May 2017
Letters of invitation to participant [Appendix 8 email recruitment]	1.0	02 June 2017
Participant consent form [Appendix 6 Interview consent form]	4.0	23 August 2017
Participant information sheet (PIS) [Appendix 4 Interview Information Sheet v4.0 23-Aug-17]	4.0	23 August 2017
Referee's report or other scientific critique report [Letter for Laura Marshall]	1.0	14 December 2016
Research protocol or project proposal [Protocol V1.0 23-8-17]	1.0	23 August 2017
Summary CV for Chief Investigator (CI) [KD short CV IRAS V2 28-Apr-17 signed]	2.0	28 April 2017
Summary CV for student [LM IRAS CV]	1.0	14 December 2016
Summary CV for supervisor (student research) [ZP IRAS CV]	1.0	19 December 2016
Summary CV for supervisor (student research) [AF CV IRAS]	2.0	23 December 2016
Summary, synopsis or diagram (flowchart) of protocol in non technical language [Appendix 2 Flow Diagram]	2.0	30 May 2017
Summary, synopsis or diagram (flowchart) of protocol in non technical language [Appendix 1 Study Overview]	2.0	30 May 2017

Appendix B - Summary of HRA Assessment

This appendix provides assurance to you, the sponsor and the NHS in England that the study, as reviewed for HRA Approval, is compliant with relevant standards. It also provides information and clarification, where appropriate, to participating NHS organisations in England to assist in assessing and arranging capacity and capability.

For information on how the sponsor should be working with participating NHS organisations in England, please refer to the, *participating NHS organisations, capacity and capability and Allocation of responsibilities and rights are agreed and documented (4.1 of HRA assessment criteria) sections in this appendix.*

The following person is the sponsor contact for the purpose of addressing participating organisation questions relating to the study:

Name: Dr Clark Crawford
 Tel: 01782733371
 Email: research.governance@keele.ac.uk

HRA assessment criteria

Section	HRA Assessment Criteria	Compliant with Standards	Comments
1.1	IRAS application completed correctly	Yes	No comments
2.1	Participant information/consent documents and consent process	Yes	No comments
3.1	Protocol assessment	Yes	No comments
4.1	Allocation of responsibilities and rights are agreed and documented	Yes	The Statement of Activities and Schedule of Events will act as the agreement between the sponsor and site. Although formal confirmation of capacity and capability is not expected of all or some organisations

Section	HRA Assessment Criteria	Compliant with Standards	Comments
			participating in this study (see <i>Confirmation of Capacity and Capability</i> section for full details), and such organisations would therefore be assumed to have confirmed their capacity and capability should they not respond to the contrary, we would ask that these organisations pro-actively engage with the sponsor in order to confirm at as early a date as possible. Confirmation in such cases should be by email to the CI and Sponsor confirming participation based on the relevant Statement of Activities and information within this Appendix B.
4.2	Insurance/indemnity arrangements assessed	Yes	Where applicable, independent contractors (e.g. General Practitioners) should ensure that the professional indemnity provided by their medical defence organisation covers the activities expected of them for this research study
4.3	Financial arrangements assessed	Yes	Participants will be paid £80 per hour. The payment will be made directly to the GP practice.
5.1	Compliance with the Data Protection Act and data security issues assessed	Yes	No comments
5.2	CTIMPS – Arrangements for compliance with the Clinical Trials Regulations assessed	Not Applicable	No comments
5.3	Compliance with any applicable laws or regulations	Yes	No comments
6.1	NHS Research Ethics Committee favourable opinion received for applicable studies	Not Applicable	No comments
6.2	CTIMPS – Clinical Trials Authorisation (CTA) letter	Not Applicable	No comments

IRAS project ID	218034
-----------------	--------

Section	HRA Assessment Criteria	Compliant with Standards	Comments
	received		
6.3	Devices – MHRA notice of no objection received	Not Applicable	No comments
6.4	Other regulatory approvals and authorisations received	Not Applicable	No comments

Participating NHS Organisations in England

<i>This provides detail on the types of participating NHS organisations in the study and a statement as to whether the activities at all organisations are the same or different.</i>
There is one site type. The research team will identify staff participants. Consent and interviews may be conducted at the sites or via telephone.
The Chief Investigator or sponsor should share relevant study documents with participating NHS organisations in England in order to put arrangements in place to deliver the study. The documents should be sent to both the local study team, where applicable, and the office providing the research management function at the participating organisation. For NIHR CRN Portfolio studies, the Local LCRN contact should also be copied into this correspondence. For further guidance on working with participating NHS organisations please see the HRA website.
If chief investigators, sponsors or principal investigators are asked to complete site level forms for participating NHS organisations in England which are not provided in IRAS or on the HRA website, the chief investigator, sponsor or principal investigator should notify the HRA immediately at hra.approval@nhs.net . The HRA will work with these organisations to achieve a consistent approach to information provision.

Confirmation of Capacity and Capability

<i>This describes whether formal confirmation of capacity and capability is expected from participating NHS organisations in England.</i>
The HRA has determined that participating NHS organisations in England are not expected to formally confirm their capacity and capability to host this research , because all study activity will be conducted by the research team.
<ul style="list-style-type: none"> • The HRA has informed the relevant research management offices that you intend to undertake the research at their organisation. However, you should still support and liaise with these organisations as necessary. • Following issue of the HRA Approval letter, and subject to the two conditions below, it is expected that these organisations will become participating NHS organisations 35 days after issue of this Letter of HRA Approval (no later than 15th December 2017): <ul style="list-style-type: none"> ○ You may not include the NHS organisation if they provide justification to the sponsor and the HRA as to why the organisation cannot participate

- You may not include the NHS organisation if they request additional time to confirm, until they notify you that the considerations have been satisfactorily completed..
- You may include NHS organisations in this study in advance of the deadline above where the organisation confirms by email to the CI and sponsor that the research may proceed.
- The document "[Collaborative working between sponsors and NHS organisations in England for HRA Approval studies, where no formal confirmation of capacity and capability is expected](#)" provides further information for the sponsor and NHS organisations on working with NHS organisations in England where no formal confirmation of capacity and capability is expected, and the processes involved in adding new organisations. Further study specific details are provided the *Participating NHS Organisations and Allocation of responsibilities and rights are agreed and documented (4.1 of HRA assessment criteria)* sections of this Appendix.

Principal Investigator Suitability

This confirms whether the sponsor position on whether a PI, LC or neither should be in place is correct for each type of participating NHS organisation in England and the minimum expectations for education, training and experience that PIs should meet (where applicable).

A Local Collaborator should be identified at the sites to facilitate access arrangements for the external research team where needed.

GCP training is not a generic training expectation, in line with the [HRA statement on training expectations](#).

HR Good Practice Resource Pack Expectations

This confirms the HR Good Practice Resource Pack expectations for the study and the pre-engagement checks that should and should not be undertaken

External staff (e.g. University) will only be expected to obtain Letters of Access if study activity is being conducted in patient care areas of the site.

Other Information to Aid Study Set-up

This details any other information that may be helpful to sponsors and participating NHS organisations in England to aid study set-up.

- The applicant has indicated that they do not intend to apply for inclusion on the NIHR CRN Portfolio.

Appendix 18: Ethical approval documents for stakeholder engagement consensus exercise



29th October 2018

Dear Laura,

PI: Laura Swaithes

Title: Getting evidence in to practice in primary care: Stakeholder engagement project

Ref: ERP2408

Thank you for submitting your application for review. The proposal was reviewed by the Panel Chair. I am pleased to inform you that your application has been approved by the Ethics Review Panel.

If the fieldwork goes beyond the date stated in your application, or there are any amendments to your study you must submit an 'application to amend study' form to the ERP administrator at research.governance@keele.ac.uk. This form is available via <https://www.keele.ac.uk/raise/researchsupport/projectassurance/researchethics/>

If you have any queries please do not hesitate to contact me, in writing, via the ERP administrator, at research.governance@keele.ac.uk stating ERP2408 in the subject line of the e-mail.

Yours sincerely
PP.

A handwritten signature in black ink, appearing to read "Colin Rigby".

Colin Rigby
Chair – Ethical Review Panel

Appendix 19: Ethical approval documents for minor amendment to study

Partner Organisations:

Health Research Authority, England

NHS Research Scotland

HSC Research & Development, Public Health Agency, Northern Ireland

NIHR Clinical Research Network, England

NISCHR Permissions Co-ordinating Unit, Wales

Notification of Non-Substantial/Minor Amendments(s) for NHS Studies

This template **must only** be used to notify NHS/HSC R&D office(s) of amendments, which are **NOT** categorised as Substantial Amendments.

If you need to notify a Substantial Amendment to your study then you MUST use the appropriate Substantial Amendment form in IRAS.

Instructions for using this template

- For guidance on amendments refer to <http://www.hra.nhs.uk/research-community/during-your-research-project/amendments/>
- This template should be completed by the CI and optionally authorised by Sponsor, if required by sponsor guidelines.
- This form should be submitted according to the instructions provided for NHS/HSC R&D at <http://www.hra.nhs.uk/research-community/during-your-research-project/amendments/which-review-bodies-need-to-approve-or-be-notified-of-which-types-of-amendments/>. If you do not submit your notification in accordance with these instructions then processing of your submission may be significantly delayed.

1. Study Information

Full title of study:	Enhancing quality care for adults (aged 45 years and over) with osteoarthritis: a knowledge mobilisation case study and recommendations for primary care
IRAS Project ID:	218034
Sponsor Amendment Notification number:	AM01 NSA01
Sponsor Amendment Notification date:	05.11.2018
Details of Chief Investigator:	
Name [first name and surname]	Professor Krysia Dziedzic
Address:	Institute for Primary Care and Health Sciences Keele University
Postcode:	ST5 5BG
Contact telephone number:	01782733907
Email address:	k.s.dziedzic@keele.ac.uk
Details of Lead Sponsor:	

Partner Organisations:

Health Research Authority, England

NHS Research Scotland

HSC Research & Development, Public Health Agency, Northern Ireland

NIHR Clinical Research Network, England

NISCHR Permissions Co-ordinating Unit, Wales

Name:	Keele University Dr Clark Crawford Head of Research Integrity Directorate of Research Innovation and Engagement, Keele University Sponsor ID RG-0055-16-PCHS
Contact email address:	Research.governance@keele.ac.uk
Details of Lead Nation:	
Name of lead nation <i>delete as appropriate</i>	England
If England led is the study going through CSP? <i>delete as appropriate</i>	No
Name of lead R&D office:	

Partner Organisations:
 Health Research Authority, England
 NHS Research Scotland
 HSC Research & Development, Public Health Agency, Northern Ireland
 NIHR Clinical Research Network, England
 NISCHR Permissions Co-ordinating Unit, Wales

2. Summary of amendment(s)
 This template must only be used to notify NHS/HSC R&D office(s) of amendments, which are NOT categorised as Substantial Amendments.
 If you need to notify a Substantial Amendment to your study then you MUST use the appropriate Substantial Amendment form in IRAS.

No.	Brief description of amendment (please enter each separate amendment in a new row)	Amendment applies to (delete/ list as appropriate)		List relevant supporting document(s), including version numbers (please ensure all referenced supporting documents are submitted with this form)		R&D category of amendment (category A, B, C) For office use only
		Nation	Sites	Document	Version	
1	Change to study title from: Enhancing the quality of care for adults (aged 45 years and over) with Osteoarthritis (OA): A knowledge mobilisation case study and recommendations for primary care To; Enhancing the quality of care for adults (aged 45 years and over) with Osteoarthritis (OA): A knowledge mobilisation study and recommendations for primary care Please note – There are NO changes to the methods, sampling, analysis or research question	England	All sites	Appendix 4 Interview Information Sheet Appendix 5 Interview Invitation Letter and Reply Slip Appendix 6 Interview Consent Form Appendix 7 Interview Reminder Letter and Reply slip Appendix 8 Email advert for recruitment Protocol	V5.0 31-Jul-18 V3.0 31-Jul-18 V5.0 31-Jul-18 V3.0 31-Jul-18 V2.0 31-Jul-18 V2.0 02-11-18	
2						
3						
4						
5						

[Add further rows as required]

Partner Organisations:

Health Research Authority, England
NHS Research Scotland
HSC Research & Development, Public Health Agency, Northern Ireland

NIHR Clinical Research Network, England
NISCHR Permissions Co-ordinating Unit, Wales

3. Declaration(s)

Declaration by Chief Investigator

- I confirm that the information in this form is accurate to the best of my knowledge and I take full responsibility for it.
- I consider that it would be reasonable for the proposed amendment(s) to be implemented.

Signature of Chief Investigator: 

Print name: K.Dziedzic


Date: 2-11-18

Optional Declaration by the Sponsor's Representative (as per Sponsor Guidelines)

The sponsor of an approved study is responsible for all amendments made during its conduct.

The person authorising the declaration should be authorised to do so. There is no requirement for a particular level of seniority; the sponsor's rules on delegated authority should be adhered to.

- I confirm the sponsor's support for the amendment(s) in this notification.

Signature of sponsor's representative: 

Print name: JOANNE SIMON

Post: RESEARCH INTEGRITY MANAGER

Organisation: KEELE UNIVERSITY

Date: 05-11-2018

IRAS 218034. Amendment categorisation and implementation information

1 message

hra.amendments@nhs.net <noreply@harp.org.uk>
 Reply-To: hra.amendments@nhs.net
 To: k.s.dziedzic@keele.ac.uk, research.governance@keele.ac.uk, l.swaites@keele.ac.uk
 Cc: studysupportpccrwestmidlands@nih.ac.uk

Amendment Categorisation and Implementation Information

Dear Professor Dziedzic,

IRAS Project ID:	218034
Short Study Title:	Enhancing quality care in OA: a knowledge mobilisation case study
Date complete amendment submission received:	5 November 2018
Amendment No./ Sponsor Ref:	AM01 NSA01
Amendment Date:	5 November 2018
Amendment Type:	Non-substantial
Outcome of HRA and HCRW Assessment	This email also constitutes HRA and HCRW Approval for the amendment, and you should not expect anything further.
For NHS/HSC R&D Office information	
Amendment Category	C

Thank you for submitting an amendment to your project. We have now categorised your amendment and please find this, as well as other relevant information, in the table above.

What should I do next?

If you have participating NHS/HSC organisations in any other UK nations that are affected by this amendment **we will** forward the information to the relevant national coordinating function(s).

You should now inform participating NHS/HSC organisations of the amendment.

- For NHS organisations in England and/or Wales, this notification should include the [NHS R&D Office](#), [LCRN](#) (where applicable) as well as the local research team.

When can I implement this amendment?

You may implement this amendment **immediately**. Please note that you may only implement changes described in the amendment notice.

TOP TIPS

Implementation for impact

It takes on average 17 years to get research into practice and only 30-40% results in a demonstrable patient benefit. Therefore, implementation can enhance uptake of research and reduce research waste.

Implementation is a complex, multifaceted process that requires an interdisciplinary approach and considers patient and public priorities, and knowledge of theory. The health and care context is a key factor in implementation activities.

Tip 1 - Leading across boundaries

Consider the importance of leadership when mobilising knowledge across organisational boundaries. Knowledge may include research, clinical and patient experience. Leadership isn't necessarily a formal position, rather it's about influencing other stakeholders at all levels to play an active part in driving change across organisations. Anyone may have a role in 'leading from the middle' using key relationships to affect change.

Tip 2 - Values matter

Express values and culture clearly and early on. Values of stakeholder participation might include:

- Sharing power and responsibility equitably;
- Setting a common understanding of the purpose of implementation;
- Working with mutual respect and recognition;
- Continuous communication across stakeholder communities;
- Clear and relevant goals, consistent with the implementation proposals;
- Outcomes have that mutual benefit for researchers and communities

Tip 3 - Patient and Public Involvement and Engagement

'Patients are the most under-used resource in any health care system'

Patients, carers and public champions offer multi-faceted perspectives and should be involved in all stages of the research and implementation cycle providing:

- Expertise through personal experiences of health and care
- Insight into the whole patient journey
- Influence in priority setting
- Co-creation of innovation

-
- Stories of impact
 - Links to networks

Tip 4 - Design an implementation strategy

Design a realistic implementation plan to achieve your goals. Consider:

- Stakeholder needs and priorities
- Using theory (1)
- Co-production methods for the specific context
- A compelling case for change
- Clarifying what do you want to achieve and where are you now
- Deciding where you want to be
- Plans for outcomes and evaluation
- Your time frame for the implementation
- Resource needs

Tip 5 - Theories, Models and Frameworks

Understanding and evaluating the implementation of complex interventions can be helped by the application of theory. Theory can not only contribute to planning the implementation activity but also to: understanding barriers and facilitators; explaining the processes of implementation and; the reasons for the success or failure of the uptake of best evidence into practice (1).

Tip 6 - Offer flexibility

Make it easy for stakeholders to 'do the right thing'. New interventions and innovations should be flexible and available in different formats, to aid successful adoption in different contexts.

Improvement practice teaches us that the sustainment of implementation is more associated with sharing the principles of good practice, rather than ensuring that everyone uses the same practice.

Tip 7 - Knowledge mobilisers

Knowledge mobilisers and champions may be clinicians, managers, policy makers, researchers, patients, and the public. Many knowledge mobilisers work within and across extensive networks. Identify individuals with a range of skills that lend themselves to improvement activities and innovation. These people may be the 'change champions' and knowledge mobilisers that make the difference between success and failure.

Tip 8 - Early adopters

Implementation can start with a pilot to test and refine new approaches and to evaluate barriers and facilitators. Implementation activities can be accelerated by developing a group or Community of Practice (1) that can share experiences and insights throughout the implementation journey. Audit and feedback will gauge progress and help to refine, redesign and adapt approaches for scaling up.

Tip 9 – Capturing impact

Consider how to measure any change that has been achieved. Select measures that can be used readily in audit and feedback cycles. Capture evidence of impact. Stories, personal experiences as well as big data can be a part of the evaluation and reporting process. It is important to showcase and share progress including the lessons learnt from the project.

Tip 10 – Measuring success

Decide what success looks like; quality of care; or specific outcomes? For whom? Population health is another concern in implementation science, linking the individual to public health and health improvement.

Consider what success looks like for different stakeholders and across clinical pathways. How can you measure sustainability of a new approach?

Consider shared learning awards e.g. NICE.

Reference:

1). Per Nilsen Making sense of implementation theories, models and frameworks. Implementation Science 2015;10:53 <https://doi.org/10.1186/s13012-015-0242-0>

For contact details about your local hub and for further information about **cahpr** please visit our website <http://cahpr.csp.org.uk/>

Acknowledgments

Content developed by the following authors in association with the **cahpr** Keele & South Yorkshire Hubs.

- Laura Swaites (Clinical Doctoral Research Fellow, Impact Accelerator Unit, Faculty of Health, Keele University)
- Laura Campbell (Public Engagement Knowledge Broker, Impact Accelerator Unit, Faculty of Health, Keele University)
- Dr Sally Fowler-Davis (Clinical Academic, Sheffield Hallam University and Sheffield Teaching Hospitals also NIHR Clinical Academic Training Advocate)
- Professor Krysia Dziedzic (NIHR Senior Investigator, Director Impact Accelerator Unit, Faculty of Health, Keele University, Arthritis Research UK Professor of Musculoskeletal Therapies, Adviser to the NICE Fellows and Scholars Programme, Visiting Professor in the Faculty of Health and Applied Sciences (HAS) UWE Bristol)